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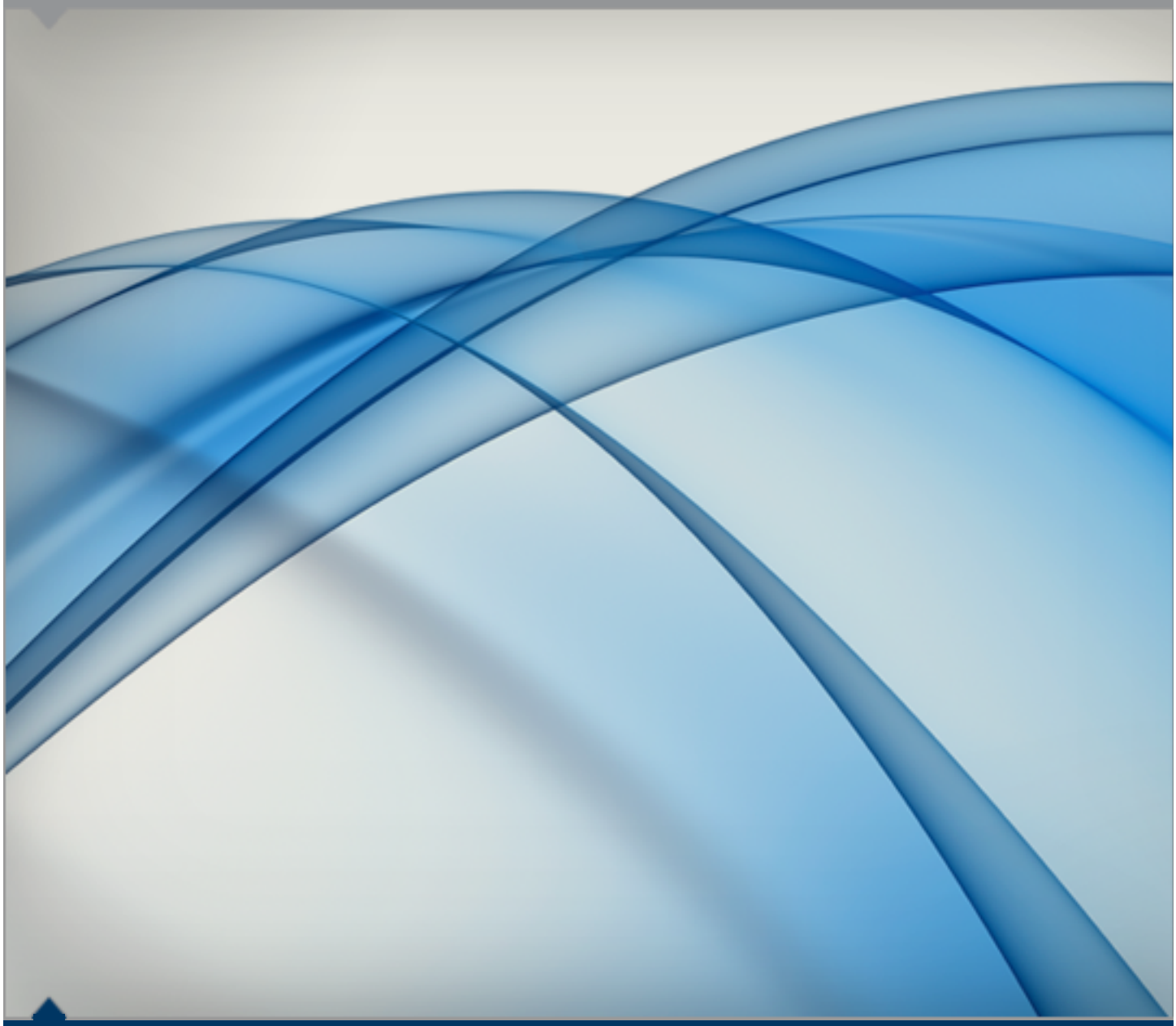

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Closing the Research/Practice Gap: The Journey from Student to Practitioner

Stacey Nordlund
San Jose State University, staceynordlund@gmail.com

Closing the Research/Practice Gap: The Journey from Student to Practitioner

The field of library and information science (LIS) is vast and its practitioners are present in libraries, archives, museums, and in corporate and other information organizations. Regardless of the type of working environment, librarians must be prepared to undertake some form of research activities through their work in order to participate fully as members of the LIS community. The act of participating in or leading a research project is invoked whether one's practice exists in the form of a member of an academic research community, as a solo librarian running an information center in a corporate organization, or as a service-oriented children's librarian developing new programs and services. Throughout my career—which, thus far, has included experience in public, academic, and special libraries—the importance of research as a unifying element among disparate environments has been quite clear. Although each organization articulates unique missions, goals, and objectives, each of these information environments uses knowledge developed through research to support these missions, goals, and objectives. The broad array of research possibilities for LIS practitioners is also clearly evident in the wide variety of topics and research paradigms that are featured in not only this particular issue of the *Student Research Journal (SRJ)*, but our publication as a whole.

It is important to point out, however, that a significant gap between research and practice has been frequently noted in the LIS literature. Haddow & Klobas (2004) note the flaws in communication of research to practice, specifically in the LIS field. In a review of the existing literature, Haddow & Klobas determined that practitioners lacked motivation or interest in conducting research, tended to avoid participation in research work, lacked knowledge and skill in conducting research, and spent most of their time focusing on day-to-day operations rather than conducting reading or research activities. This disconnect between research and practice may potentially be rectified by increasing practitioner involvement in the research process (Haddow & Klobas, 2004). Increasing involvement in the research process can be initiated in the early stages of a career in the LIS field. Beginning at the student level, a research methods class, such as the one required in San José State University's (SJSU) School of Library and Information Science (SLIS) Master of Library and Information Science (MLIS) program, serves as an excellent foundation that opens the door to increased understanding of and participation in research activities throughout one's professional career.

It is key to build this foundation in soon-to-be LIS professionals as they initiate their graduate education. In this issue of *SRJ*, our authors demonstrate not only the merit of developing a comprehensive understanding of research methods in order to approach a research question or problem, but, more specifically, the

importance of clearly articulating a research question in order to pursue a problem in an organized way. It is fruitless to undertake new projects, propose systemic changes, or develop innovative programs and services without developing a plan based on an examination of the existing research or by undertaking a primary research project based on a specific research question. In order to successfully participate in the research process, it is essential to develop at least a foundational understanding of the research paradigms underpinning the chosen field.

Even those who claim to be "not interested" in research, or who fail to see its value, may experience a change of heart once they have broadened their understanding of the concepts and applications through a LIS research methods class. In this issue's Invited Contribution, Dr. Lili Luo, Assistant Professor at SJSU SLIS, uses the results of her research study to demonstrate the importance of formal research methods classes in LIS programs to enhance practitioner work in the LIS field. Dr. Luo (2012) conducted a survey study "to examine how taking research methods courses affects LIS practice, hoping to generate more awareness about the value of research methods education among LIS practitioners, encourage them to apply research to enhance practice, and promote the evidence-based culture in LIS" (p. 2). The responses she received were favorable towards making research methods courses a mandatory component of LIS programs. Dr. Luo (2012) concludes,

> LIS students, when preparing themselves for professional careers, need to have a grounded understanding of how research can help them with their professional practice, equip themselves with the necessary knowledge and skills from the research methods course, and better yet, have a genuine interest in research and discovery. (p. 6)

In developing this knowledge and understanding of research methods, students prepare themselves adequately for their future careers and for continued participation in some form, even after completing their academic work and moving into practice. This participation may take, on one hand, the form of directly conducting research in the field, in a variety of environments. On the other hand, this continued participation may take the form of reading and interpreting research; participating in the discourse informally, or sharing knowledge through a variety of means.

In "Certification of Librarians: An Unproven Demand," Jonathan Pacheco Bell considers the purpose of professional certification and its relation to LIS professionals in the United States. He asks,

> In light of the increasing complexity and evolving role of librarianship in the 21st century, proper librarian training and qualifications are paramount

> concerns to practitioners and the public alike. Accordingly, this paper examines the following research question: Is certification of librarians necessary to ensure high quality service? (Bell, 2012, p. 2)

This question is addressed throughout the paper as Bell defines certification, provides an historical survey of LIS certification initiatives, and analyzes the arguments both in favor of and against librarian certification in an in-depth review of the literature. In the end, Bell (2012) concludes by answering the question; he asserts that certification cannot be deemed necessary to ensure high quality library service. Rather, he argues, the complexity of the evolving role of the librarian in combination with the expansive bureaucracy that would be necessarily put into place to support a certification program render "the case for certification...unconvincing" (p. 20). This is research that shapes practice, by introducing a clear, concise question of relevance to current practice, and by considering this question in an in-depth exploration of the literature.

Jonathan Pacheco Bell is an MLIS student at SJSU-SLIS and a Research Assistant for SJSU's IMLS grant-funded national study "Making Space for Young Adults in Public Libraries: Establishing a Research Foundation." Jonathan received his M.A. in Urban Planning from UCLA and studied political science and architecture as an undergraduate. He works as an urban planner in Los Angeles, CA.

In "An Exploratory Study of Online Information Regarding Colony Collapse Disorder," Meredith K. Boehm reviews information dissemination and web-based communication practices in the context of Colony Collapse Disorder (CCD), a current phenomenon resulting in declining honey bee populations. Boehm's study uses content analysis to compare information presented on four U.S. government websites and asks whether these information sources present CCD comprehensively to a broad spectrum of readers. She also considers which information topics are well-presented and which are missing or incomplete from these web-based information sources. The results from the content analysis show a combination of both strengths and weaknesses in existing government information sources. Boehm (2012) notes three specific findings needing further exploration: "the lack of current information, the need for network landscape mapping to understand the nuances of the connections between the entities, and the lack of interactivity and public engagement" (p. 14).

Boehm's study clearly demonstrates the relationship between research and application, and the importance of clearly stating a specific research problem when undertaking an exploratory research project. Specific questions are asked and answered, and future research may expand on these questions by using the

same framework in the study of additional content areas and/or additional information sources for CCD information. In this way, the research process develops gradually from one source to the next, continually evolving and producing new insights and discoveries. All may be achieved within the context of practice.

Meredith K. Boehm is a Knoxville, Tennessee native with a bachelor's degree in ceramic arts from the Maryland Institute College of Art in Baltimore, Maryland. Currently preparing to begin doctoral studies in information sciences and communication, Meredith's research interests focus on the intersection of e-government and e-science, citizen involvement in complex scientific problem solving, and the systemic function of large-scale data infrastructures for environmental science research. Meredith has been fortunate to work as a graduate teaching and research assistant for Dr. Vandana Singh and Dr. Dania Bilal as a master's degree student at the University of Tennessee School of Information Sciences. Meredith also performed a role as a paid intern at the Oak Ridge National Laboratory's Distributed Active Archive Center for Biogeochemical Dynamics (DAAC) and contributed to NASA's FLUXNET network database and other climate change data archiving projects at the DAAC. In the future Meredith's goal is to achieve a position as a research professional, publishing scholarly work as a representative of an academic institution and to teach students as a professor of information sciences specializing in science communication studies.

Kathy J. Fatkin explores the evolution of U.S. hospitals and medical libraries, and the changing role of the librarian in "Using Organization Theory to Explore the Changing Role of Medical Libraries." Fatkin (2012) asks, "Can organization theory explain the changes in United States (U.S.) medical libraries and the services professional librarians provide to the hospital staff?" This historical research review begins with an overview of organization theory, and describes the development of U.S. hospitals and medical libraries over the last century. Fatkin then discusses the rise in evidence-based practice in healthcare, which mirrors the current state of LIS research. She notes,

> Evidence-based healthcare is a valuable tool in reducing the gap between what we know from research and what we do in practice....The medical librarian, who is comfortable with reading research and translating findings for others, can easily fulfill the role of informationist or knowledge broker. Outside forces are once again reshaping the responsibilities of the medical librarian. (Fatkin, 2012, p. 10)

The necessity of developing a comprehensive understanding of the research process, therefore, is not merely to act successfully as participant in the act of conducting primary research, but, equally importantly, as translator of existing work. Librarians do not simply provide generic information to users; rather we define, instruct, and delve into explanation of complex materials—including research findings. As LIS research develops further as an evidence-based practice, the research/practice gap may be minimized if practitioners continue to develop skills in this area.

Kathy J. Fatkin is a doctoral student at Emporia State University in Emporia, Kansas. She works at Eastern Idaho Regional Medical Center as a solo librarian in the medical library and she is also a registered nurse. Her research interests include how nurses use information to improve patient care and how the health science librarian can better serve nurses in acute care settings.

Camelia Naranch assesses how law librarians support the efforts of legal scholars in the study of foreign, comparative, and international law in "International Legal Collections at U.S. Academic Law School Libraries." Naranch opens her article with a description of the current state of foreign, comparative, and international law training in law schools, and then moves into a description of the collections and resources that are available to support these students in their training. Naranch (2012) surveys legal collections—print, online research guides, and databases—at twelve public and private U.S. academic libraries, and queries "how law librarians are participating in the process of creating new fields of international legal research and training" (p. 2).

Naranch (2012) notes the role law librarians play in ensuring global access to information, ensuring accuracy and currency of information, and preserving knowledge for future generations of use. She concludes that "as committed information professionals, they have been actively involved in all stages of the process" (p. 13), including as teachers, as information specialists, as advocates for open access, and as critical observers of legal collection development and management. Again, we see the relationship between research and practice as librarians translate research into information that is both usable for and understood by law students. This is achieved through individual or group research consultation as well as through the creation of new reference materials and research guides, both print and online.

Camelia Naranch is a serials specialist at the Robert Crown Law Library at Stanford University and an MLIS student at San Jose State University. She may be contacted at cnaranch@law.stanford.edu.

The LIS research community is growing, and it is vital for LIS professionals to maintain an understanding of research paradigms and to remain active in current scholarly discourse. Only in this way are we able to make worthwhile contributions to the field, whether as researcher or as practitioner. By developing knowledge of the current state of research, we can adapt our practices accordingly. In this way, we may resolve the disconnect experienced by practitioners as presented by Haddow and Klobas (2004). This journey begins through the mandatory completion of a graduate research methods class, and is continued through participation in scholarly activities and consumption of LIS literature throughout one's career. The *Student Research Journal* serves as a source for student education and enhanced research skills development through three modes of participation: as editor, as author, or as reader. Whether as editor, author, or reader, students are trained in research methods as well as in the importance of structuring a research paper by forming a clearly articulated research question. In the journey from student to practitioner this experience-based knowledge will be retained and we will more easily bridge the gap between research and practice.

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Value of the Research Methods Course: Voices from LIS Practitioners

Lili Luo
San Jose State University, lili.luo@sjsu.edu

Value of the Research Methods Course: Voices from LIS Practitioners

Library and Information Science (LIS) is a rapidly evolving field where practitioner research has become ever more important as it seeks "in a most rigorous manner, to understand and create efficient working practice" (Jarvis, 1999, p. xi). Research serves to create new knowledge and therefore contribute to the growth of LIS as a profession (Powell, Baker, & Mika, 2002). A rising number of practitioner-researchers undertake their own research to meet "the need for more information for use in decision making at the managerial level, the need to keep abreast of new knowledge and procedures in this information society, and the need for continuing education and upgraded qualifications" (Jarvis, 1999, p. 7).

Hernon (2001) defined research as an inquiry process that has specific components, including reflective inquiry (problem statement, literature review and theoretical framework, logical structure, objectives, and research questions and hypotheses), procedures (research design and methods of data collection), data gathering/processing/analysis, issues of reliability and validity of study, and finally presentation of research findings. We also refer to it as primary research, to be differentiated from secondary research that only involves the summary, collation and/or synthesis of existing research.

In LIS, practitioner research is conducted to "improve problem solving and decision making in the workplace, to make professional practitioners critical consumers of the research literature, and to better equip librarians to provide optimal information services to researchers in other fields" (Powell et al., p. 50). Numerous studies have attested to the importance of research in the advancement of the profession. Evidence is ample in the literature that suggests research skills play an important role in librarians' work such as reference consultations, information literacy instruction, evaluation and management, and promotion and tenure (Bodi, 2002; Fister, 1992; Fister, 1993; Lenox, 1985; Perkins & Helbig, 2008). Hernon and Schwartz (1995) summarized that research "can and should provide insights and guidance into how well library programs, services, and collections function, especially in making libraries more responsive service organizations" (p. 102).

To enhance practitioners' understanding and appreciation of the practical value of research and equip them with necessary knowledge/skills to interpret/conduct research to solve problems in the working world, offering formal research methods education in LIS degree programs plays a pivotal role (Stoan, 1984). In 2009, I conducted a Web-based survey study to examine how taking research methods courses affects LIS practice, hoping to generate more awareness about the value of research methods education among LIS practitioners, encourage them to apply research to enhance practice, and promote the evidence-based culture in LIS. A total of 555 LIS practitioners participated in the study, and

among them, the majority was academic librarians (78.9%), and the rest were distributed among public librarians (11.2%), government librarians (4.5%), and librarians working in various other types of libraries such as corporate libraries, law libraries, medical libraries, digital libraries, research libraries, school libraries, and library consortia (5.6%). A little less than half of the respondents (42.8%) indicated that they were in management positions. Reference and information services, information literacy instruction, and development/management of collections and resources were the top three areas of job responsibility shared by most respondents.

The survey first inquired about their research involvement at work. The majority of the respondents (84.7%) reported various types of research activities. The two most popular research activities are reading research articles and applying the findings to improve work, and examining research articles when helping patrons in reference consultations. When asked about how taking the research methods course has helped their work, four-fifth of the responses were affirmative about the course's helpfulness. Respondents noted that the course has positively influenced their work in the following six areas:

- It helps respondents better understand LIS research literature, critically evaluate published research findings, and properly apply them at work. Exemplar quotes from the respondents:

  > "I am able to analyse[analyze] the data when I read articles about research projects. Some of the techniques are so faulty that I ignore the results. "
  >
  > "Recently, I and some colleagues have been trying to persuade our administration of the need to provide more "cutting edge" types of reference. Historically resistant, (we don't even have chat reference) I sued [used] research methodology to scan the literature for stats, trends, what other libraries are doing, etc and create a proposal."

- It helps respondents develop a better understanding of research literature in other fields, and therefore be able to properly evaluate its value to patrons' information needs and to assist patrons in their research process. Exemplar quotes from the respondents:

  > "As a government information librarian I assist patrons with census and statistical information and my background in research methods helps me evaluate compiled statistics and those found in research articles."
  >
  > "Working in a hospital library, with the focus so heavily on research and evidence, it helps me better evaluate articles, and helps me help my patron to identify which articles are research-oriented, and help quantify the value of the research they conducted."

- It helps respondents produce reliable and valid data to facilitate the decision making process. Exemplar quotes from the respondents:

  "I was able to use the knowledge of research methods to redesign the library's customer satisfaction survey so that it would provide us with valid, reliable results."

  "I conduct use studies of our print journal collections. I am aware of types of use that will skew the data and can adjust the study accordingly. "

- It helps respondents identify problems at work and properly design/implement research studies to solve the problems. Exemplar quotes from the respondents:

  "We are in the midst of producing a survey to identify user needs and wants regarding databases currently offered at our institution. Knowing something about research methods has helped in putting the survey together and will help in analyzing the responses."

  "Research helps to define areas that need improvement; assists in using statistical data to analyze problems and their solutions; defines different functions in the Library and helps to focus librarians on goals and objectives."

- It helps respondents write research papers for publication. Exemplar quotes from the respondents:

  "When I began my MLS degree, I had no intention of doing research. Luckily our research methods class was required, because my first job out of library school is in a tenure-track position with a requirement for publishing. I have already contacted my research methods prof [professor] and thanked her profusely for what I learned in her class. Besides all the practical knowledge, she taught me to understand that if library practitioners don't do research in library science, who will?"

  "I used statistics to analyze data in a study of help-seeking behavior of college students which I presented in a paper at an ACRL conference"

- It helps respondents compose grant applications. Exemplar quotes from the respondents:

  "My background in research methods is especially helpful when I compose grant applications because I need to have valid and reliable research to validate my proposals."

  "I am compiling information for a grant proposal which will require data to support our need and plans for the grant funds. I have been able to use my research methods class knowledge to pull

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and analyze other's data from LIS literature as well as plan out how I will conduct my own needs assessment for my library."

Respondents' opinions were elicited regarding whether the research methods course should be a required component of the MLIS degree. About three-fourths answered "yes." Respondents provided a variety of reasons to explain the necessity of including the research methods course as a mandatory part of the curriculum:

- Research is needed for working at libraries and other LIS organizations. Library operation should be evidence based, and therefore LIS professionals need to have the knowledge of valid and reliable research methods in order to interpret and conduct research to support decision making, assess and improve services, and fulfill other functional needs of the library.
- Knowledge of research methods is useful in many aspects of library work, and it is beneficial to acquire the knowledge in the MLIS program.
- Research in general is important to the profession of LIS, and everybody working in this profession should have a basic understanding of research methods, whether or not they have the need to involve research at work.
- MLIS being a graduate degree and having the word "science" in its name indicates that a basic knowledge of research should be an integral and indispensible part of the education.
- Consuming and conducting research is the pathway for LIS professionals to develop a thorough understanding of the profession, contribute to the growth of professional literature, and move the profession forward. The research methods course helps lay the foundation for this pathway.
- Many students do not have any exposure to research prior to the MLIS program, and it might be the best opportunity for them to take the research methods course during the MLIS program.

Overall, I'm excited to learn from the study that taking the research methods course is deemed helpful by most practitioners. The course offers relevant and useful knowledge that helps LIS practitioners with various aspects of their professional work, and thus constitutes an important educational experience for them. Considering the value of taking the research methods course, the majority of the practitioners, regardless of whether they work in a public or academic library and whether or not they took the research methods previously, agree that it should be made a mandatory component of the MLIS degree. Currently about 61% of LIS degree programs have this requirement, and School of Library and Information Science (SLIS) at San Jose State University (SJSU) is one of them.

At SLIS, the Research Methods course is offered in an unconventional fashion. In addition to a general-purpose course that covers the frequently used

research methods in the field of LIS, special topics are available for students to choose based on their interest. The specializations include different types of research, such as qualitative research or action research, or different LIS domains, such as research in reference and information services or youth services. Students with different backgrounds and pursuits may choose accordingly to fulfill their needs. For example, students who intend to seek positions as children or young adults' librarians, may select the section that introduces them to the theory and methods of planning and evaluating youth services (children and young adults). Those who have an interest in working in archives may select the section that covers theory and methods of historical research and writing. In addition, the research methods course can be taken twice for two specializations to allow students to expand their repertoire of research knowledge and skills. Research methods is a complex subject and a single course can only cover a limited area. Having more than one opportunity to take the course allows students to develop a fuller and deeper understanding of research methods and their application in practitioner research in LIS. Once graduated from the MLIS program and formally engaged in professional LIS practice, practitioners may still learn about research methods via continuing education. Sometimes, roadblocks like the lack of time/financial support/administrative support may prevent them from updating their research methods knowledge. Thus, as Basker (1985) suggests, it is important that employers provide incentives and allow time for practitioners to conduct research to improve work, and encourage them to hone their research skills via continuing education.

Given the value of research to the LIS profession, on one hand, libraries and other LIS organizations should promote research activities and facilitate research methods education and training, creating a supportive environment for practitioners to continue learning about research and applying/conducting research to improve work as well as furthering the profession as a whole. On the other hand, LIS students, when preparing themselves for professional careers, need to have a grounded understanding of how research can help them with their professional practice, equip themselves with the necessary knowledge and skills from the research methods course, and better yet, have a genuine interest in research and discovery. Anthropologist and author of *Their Eyes Were Watching God*, Zora Neale Hurston once said, "Research is formalized curiosity. It is poking and prying with a purpose," and therefore a curious mind will always help us embrace the wonders research brings to our work and life.

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Certification of Librarians: An Unproven Demand

Jonathan Pacheco Bell
San Jose State University, School of Library and Information Science, jbell213@gmail.com

Certification of Librarians: An Unproven Demand

Certification of librarians has been a matter of heated debate in the library and information science (LIS) profession for over a century. Supporters contend certification is needed to "protect the profession from further decline, and show the world that professional librarians are the only ones who can provide a high level of research and guidance" (Carson, 1997, p. 15). Opponents counter that certification is distracting and unnecessary—librarians are admonished to "get over it" (Nussbaumer, 2005, p. 139). Both sides offer impassioned stances but "no consensus" on the matter (Lindberg, 1990, p. 157). The continuing impasse on librarian certification forms the basis of this paper. In light of the increasing complexity and evolving role of librarianship in the 21st century, proper librarian training and qualifications are paramount concerns to practitioners and the public alike. Accordingly, this paper examines the following research question: Is certification of librarians necessary to ensure high quality service? Upon reviewing both sides of the debate, the arguments advocating national librarian certification are unconvincing. Supporters of certification appear insecure about the librarian's evolving role, fail to consider the expansive bureaucracy certification would create, and, in the end, offer no compelling evidence to require certification.

Accreditation, Licensure, and Certification

The LIS profession uses accreditation, licensure, and certification as means to ensure quality control over library schools and practitioners. These are related but distinct terms that require clarification. Goggin (1993) cogently defined these terms as they are used within the LIS field. "Accreditation is the process of examining the educational programs that prepare persons for entrance into the profession and attesting that the programs meet certain predetermined and predescribed standards" (pp. 186-187). In other words, accreditation confirms the competency of library schools, not librarians. The Office of Accreditation of the American Library Association (ALA) accredits library schools in the United States and Canada (American Library Association, 2012).

Licensure and certification, on the other hand, operate at the individual practitioner level. "Licensure is the legal requirement that each person wishing to practice in a profession must obtain a license [which] gives the person the right to perform the duties of that profession" (Goggin, 1993, p. 187). As legal entitlements, licenses are issued and regulated by governmental agencies. Though closely related, licensure and certification are not synonymous, a fact often lost in the debate leading to confusion over the terms (Kaatrude, 1992). Within the LIS field, licensure requirements are generally limited to public school librarians who

also hold teacher credentials. As Stripling (2005) pointed out, "Although… these requirements are called *certificates*, all of them fit within the definition of *licensure* because they are government-imposed requirements for entering the field of librarianship" (p. 152, emphasis in original).

In contrast, "Certification is the process by which a professional organization… recognizes a person who has successfully completed certain prescribed requirements of education and experience and has demonstrated certain skills and competencies, and declares that person qualified to practice that profession" (Goggin, 1993, p. 187). In contrast to licensure, certification programs are administered by, and solely within the purview of, professional associations and nongovernmental organizations (Willet, 1984, p. 17). These are nuanced but important distinctions. Whereas licensure is needed to protect "the health and welfare of the public" (Goggin, 1993, p. 187), certification typically is a voluntary process undertaken to establish one's professional mettle. Certified practitioners are considered qualified to practice by demonstrating mastery of their profession's core knowledge, skills, and abilities. As Grady (2009) observed, "Certification… is a well-established practice in many professions; indeed a right of passage in some fields for those who wish to progress" (p. 230).

Importance of Professional Certification

In the broadest sense, "The purpose of certification, and the setting up of educational standards in support of certification, is to raise the quality and character of professional service to the highest possible level and to maintain the quality at that level" (Equating Professional Library Qualifications, 1960, p. 29). Seemingly a modern invention, the concept of professional certification was actually developed centuries ago. According to Jordan (1948):

> [T]he underlying idea [behind] certification is not new – it is almost as old as civilization. By the Middle Ages it was part and parcel of the social fabric. Not only were standards for groups definitely established in this period, but the two methods of achieving regulation of personnel that are currently used were instigated then. [Craft] guilds… established standards of training [and] controlled entrance to the trade. [Academic] groups… organized as professions with their standards established for the most part through educational institutions. (p. 100)

As societies evolved and gave rise to new professions, there has been no shortage of certification initiatives created to address the "fitness for service" question. Nearly 20 years ago, Goggin (1993) identified over 425 certification programs offered through various professional associations (p. 187). That number

has risen exponentially given the growth of professions and industries since then. From financial planners (Certified Financial Planner, 2012) to urban planners (American Planning Association, 2012); from protection-and-security providers (American Society for Industrial Security, 2012)[1] to information technology security specialists (International Information Systems Security Certification Consortium, 2012),[2] the earned status of "certified professional" would seem to be the new benchmark of quality assurance. The importance of certification among professions, then, is pervasive and undeniable.

The LIS profession shows an earnest interest in assuring high quality service by way of credentialing and lifelong learning initiatives. The ALA identifies "continuing education" as one of the Core Competencies of Librarianship (American Library Association, 2009). Within the broader LIS community, an abundance of specialized continuing education programs speaks to the popularity of, and apparent desire for, post-graduate certification. For example, there are certification programs for medical librarians (Medical Library Association, 2012; Jordan, 1948), school librarians (Jesseman, Page, & Underwood, 2011; Gerhardt, 1978), archivists (Academy of Certified Archivists, 2012), and records managers (Institute of Certified Records Managers, 2012; Phillips, 2004). Ojala (2003) even proposed "certifying a particular skill set," (p. 5) such as subject expertise or database searching.

Recently the ALA inaugurated two long-awaited certification programs: in 2006, the Certified Public Library Administrator program for library managers; and, in 2010, the Library Support Staff Certification program for paraprofessional personnel. Both programs are administered by the ALA's newly created Allied Professional Association. "The goal of the Certified Public Library Administrator (CPLA) program is to improve the quality of library service through the provision of practical knowledge and skills essential to successful library management" (Grady, 2005). Similarly, the Library Support Staff Certification (LSSC) program "allows library support staff to demonstrate their competencies and be certified by the American Library Association" (American Library Association-Allied Professional Association, 2012). CPLA and LSSC participants complete courses and submit portfolios demonstrating skills mastery. These programs are designed to improve service delivery and reinforce competencies. Library managers develop leadership abilities and fill knowledge gaps via CPLA certification. For paraprofessional staffers, LSSC certification buttresses on-the-job learning. Remarking on the value of these initiatives in relation to competency assurance, Tom Wilding (in Moran, 2003) said:

[1] ASIS offers three certification programs for industrial security specialists.
[2] ISC2 offers four certification programs for IT security specialists.

> In today's very complex information world, it is truer than ever before that we need to be in a continuous learning mode in order to be successful… The ALA/APA provides yet another avenue, and an important one, to document continued learning and competency development in specific areas of specialization that can enhance the portfolio of information professionals. As such, certification is important to the individual as a mark of one's continued growth and development. (p. 4)

Specifically for librarians, certification enjoys widespread support across interest groups within the LIS field. This is largely because post-graduate certification would accomplish several objectives for librarianship. As Watkins (1998) reported:

> The impetus to certify seems to come from a combination of forces: a desire for more uniform standards statewide; accountability issues relative to direct state aid to libraries; increasing or improving the view of librarianship as a profession; continuing education to keep the profession current; supplemental education in areas not addressed by preservice education; and an end-goal of improving service to the public. (p. 11)

Furthermore, librarianship is evolving and becoming more complex in the 21st century. The Information Age presents new challenges for librarians. Certification is seen as a cost-effective way to update librarians' knowledge, skills, and abilities for today's digital-centric world.

Yet, in spite of all this, no national librarian certification program exists. Rank-and-file librarians serving in our public libraries nationwide—those who interact most intimately with the public, those who largely represent the profession—have no quality assurance requirement beyond the MLIS degree. This fact is ironic given the persistent calls for librarian certification to date. This is not to say national certification has not been attempted, however. The next section reviews efforts to establish national librarian certification in the U.S. The synopsis provides historical context to the longstanding debate over whether certification is necessary to ensure high quality service.

National Librarian Certification Initiatives

The birth of modern U.S. librarianship can be traced to Melvil Dewey's professionalization initiatives in the mid-1800s (Gustaitis, 1986). The salient event was the Philadelphia Centennial Exposition of 1876, where Dewey and other library luminaries convened to deliberate the future of librarianship. By conference end, they had established the ALA, founded the *Library Journal*, and

mapped out formal education requirements for librarians (Bontenbal, 2010). These were pivotal events in the library field's professionalization. Founding a national association was a particularly significant achievement. Creating the ALA "substantially increas[ed] professional identity… and establish[ed] standards of service and conduct" (Rubin, 2010, p. 80). Indeed these two objectives—establishment of service standards and professional identity—would be sought through future certification efforts.

A 1906 edition of the *Library Journal* features one of the earliest articles on librarian certification (Kraemer, 1948, p. 158). Three years later, California became the first state to require certification of county library directors (Goggin, 1993; Kraemer, 1948). "In enacting [California's] county free library law of 1909, the paramount importance of securing a high degree of fitness in the heads of county library systems" was achieved (Williamson, 1923, p. 126). Several states followed suit and began adopting certification requirements for public-sector librarians.[3]

Support for certification steadily grew within ALA ranks. By 1916, the ALA had established the Committee on Standardization of Libraries and Certification of Librarians to study the efficacy of national certification (Tai, 1925). Certification would be the subject of Professor Charles C. Williamson's keynote speech at the 1919 ALA conference in Asbury Park, New Jersey. This meeting showcased the first public address by Professor Williamson on the issue of librarian certification – an issue he would expand upon in his seminal work *Training for Library Service*. The foundations of that groundbreaking report lie in Williamson's presentation at Asbury Park of the paper "Some Present-Day Aspects of Library Training," in which he called for creating an ALA training board to regulate professional standards through certification (Berelson, 1949). His proposal built upon Dewey's early dogged professionalization efforts and drew inspiration from other professions, namely law and medicine, which required competency demonstration beyond the academic degree. As Kraemer (1948) observed, "His plea was for country-wide certification to give the librarians a definite professional objective, to insure a reasonable degree of competency, and to raise standards as quickly as conditions would permit" (p. 158). On the surface, these improvements appeared entirely benevolent. But in proposing these objectives Williamson was also attempting to increase selectivity in librarianship. Recounting the impact of the Asbury Park keynote address, White (1976) observed:

[3] By 1947, thirty-two states had enacted some type of certification requirement for librarians serving in public libraries (Kraemer, 1948, p. 160). By 1993, Goggin (1993) reported that public librarian certification requirements were in place "in about half of the states" (p. 187). More recently, Grady (2009) identified eighteen states with some form of certification requirements for librarians in public libraries (p. 243).

> Williamson used the occasion to propose new machinery to control access to library work. Adequate control would require organization of all training activities into a single, orderly system under the general direction of an ALA Training Board… [T]he Board would be empowered to work out and adopt a scheme of standards of fitness for all grades of library service and to grant appropriate certificates to properly qualified persons. (p. 175)

Library service education had become a popular discussion topic in the aftermath of the Asbury Park conference. Williamson's controversial speech earned him regard as the foremost critic of librarian training. In 1920, he was appointed chairman of the ALA Committee on National Certification and Library Training, where he continued to advance a national certification agenda (Kramer, 1948; Tai, 1925). Debate over "proper" librarian training during that time was exacerbated by the fact that two separate pathways into librarianship existed. One path was through library schools within universities. Another was through practical training in vocational schools. Library schools for years had lobbied the ALA to "endorse them as the only appropriate forum for library training," but to no avail (Rubin, 2010, p. 84). This reluctance was largely due to sentiment in the ALA at that time considering vocational certification adequate training. In a speech at an ALA convention in 1920, Williamson even openly questioned the preeminence of library school education, saying:

> There is evidently a strong feeling on the part of many members of our Library Associations… that the label of the library school gives to the individual who wears it too great an advantage over his untrained colleagues, an advantage which neither his ability nor the character of his work justifies. (*Library Journal*, 1921, p. 856)

The *Library Journal* (1921) went on to say that the certification program being developed by Williamson's ALA committee is "designed to give full professional recognition to capable and successful workers who lack library school training or formal training of any kind" (p. 856).

Bitter relations between the ALA and library schools caught the attention of the Carnegie Corporation, Andrew Carnegie's philanthropic organization and a longtime supporter and developer of public libraries. Concerned about the emerging crisis in librarian education, the Carnegie Corporation in 1921 commissioned Williamson to study U.S. library schools and to report on the findings. Published as *Training for Library Service*, the work is more famously known as the Williamson Report. Its impact on modern librarianship is wide-ranging and irrefutable. In many ways, it rescued librarian education from

irrelevancy and possible extinction. The Williamson Report has been described as a "bold, penetrating analysis that defined the professional field, described the serious limitations within it, pointed out the possibilities of improvement… and in a very real sense, charted the possible course for a sound development within the field" (Berelson, 1949, p. 48). Of particular interest here is the Williamson Report's recommendation to establish a National Certification Board (NCB) to oversee library schools and promote professional standards via certification. In the years following his Asbury Park speech, Williamson apparently changed his position privileging vocational certification over formal education. The Williamson Report declared that proper librarian education should be housed within university library schools, followed by voluntary certification through the NCB (Williamson, 1923). In essence, the NCB was envisioned to: 1) establish "generally recognized standards and uniform methods" of service, 2) apply these standards to all practicing librarians regardless of rank or organization type, 3) align librarianship with other professions, thus improving the status of librarians in the public eye, and 4) serve as the centralized "authoritative body" to accredit library schools (Williamson, 1923, pp. 144-145).

The Williamson Report had exposed the poor quality of practicing librarians and library educators at the time. Remarking on these deficiencies, White (1976) noted that "standards of fitness were sorely at odds with professional pretensions. Librarians sought public recognition as intellectual and educational leaders" even though many had not attended college (p. 172). Thus, post-graduate certification was envisioned as a means of achieving high quality service standards among librarians nationwide.

Ironically, the library profession would adopt with enthusiasm all of the recommendations of the Williamson Report *except for* national certification (Rubin, 2010, p. 85). In the years after the Williamson Report's release, the ALA had attained legitimacy inside and outside the profession as the preeminent national library association. Capitalizing on this opportunity, U.S. library leaders opted to regulate library schools through a centralized ALA accreditation agency, in lieu of a separate, untested certification board (Carroll, 1970, pp. 44-45; Willet, 1984, p. 14). This arrangement was both convenient and tactical. The ALA accreditation board would have instant legitimacy, but also answered the persistent "competency assurance" questions by controlling the selection criteria and qualifications of incoming library school students (White, 1976, pp. 180-181).

Despite Williamson's inability to persuade library leaders to enact the NCB, certification continued to be a topic of recurring debate in the decades following the Williamson Report. For example, between 1934-1949, several ALA committees and state-level library boards considered establishing state and national certification requirements for public librarians (Kavanaugh & Wescott, 1951, pp. 199-200; Kraemer, 1948, p. 159). By 1947, thirty-two states had

enacted some type of certification requirement for librarians serving in the public sector, although these standards applied mainly to directors of municipal and county libraries (Kraemer, 1948, p. 160). Calls for certification would continue with varying degrees of fervor in the post-World War II era. It was not until the nascent days of the Information Age that the library profession would experience a surge of interest in certification. In 1980, the National Librarians Association (NLA) released its "Position Statement on Certification of the Professional in Library and Information Science." Echoing the Williamson Report, the NLA recommended establishing a National Board of Certification for Librarians, with the familiar goals of promoting competency, continuing education, and professionalism (Kaatrude, 1992, pp. 155-156). However, the NLA proposal never gained widespread support. Since then, the closest the LIS field has come to achieving national certification has been the creation of the CPLA and LSSC voluntary certification programs.

This brief historical survey illustrates how, despite the steadfast demands of certification supporters, national librarian certification has failed to materialize as an accepted benchmark of high quality service. A focused analysis of the arguments supporting and opposing librarian certification is undertaken in the literature review below.

Literature Review—Arguments "For" and "Against" Librarian Certification

The LIS field has never reached consensus over whether certification of librarians is necessary to ensure high quality service. A review of the arguments on both sides of the debate helps to explain the continuing impasse. Part one of this literature review examines the arguments supporting certification. Part two examines opposing arguments. The ensuing section offers an analysis of the findings and a critical position on the certification debate.

Arguments Favoring Certification

Supporters of librarian certification contend that certification will: 1) ensure competency; 2) remedy MLIS deficiencies; 3) align librarianship with other professions; and 4) improve professional status.

Competency assurance. Certification is frequently justified in the interest of competency assurance (Burr, 1977; Carson, 1997; Lindberg, 1990; Williamson, 1923). The literature shows a fervent and long-held desire by certification advocates to admit only "qualified" individuals into library service. Such sentiment is largely a reaction to the profession's early protocols allowing people to practice and teach librarianship without possessing formal library education

(Jordan, 1948; Williamson, 1923). This is precisely what drove Williamson (1923) to envisage his "proposed system of national certification [to] prevent the wholly unfit from masquerading under false pretenses" (p. 118). That same objective is at the heart of contemporary certification campaigns.

By instituting evaluative processes—exams, interviews, and portfolios—to assess one's grasp of library service competencies, certification is envisioned as a way to keep librarians up-to-date with new methods, trends, and procedures. Proponents insist that certification will mutually benefit librarians and information seekers. According to Burr (1977), certification "show[s] evidence of superior competence and skill which is important to the professional as well as to those utilizing his services" (p. 1729). Librarians deemed competent are regarded as more accountable for their services and possessing better knowledge of professional ethics (Goggin, 1993, p. 189; Thomas, Hinckley, & Eisenbach, 1981, p. 183). While nearly all supporters call for certification through professional associations like the ALA, a few supporters have said government licensure would be a better tool to ensure competency (Carson, 1997; Conant, 1980, p. 196). As Crowley (2008) bluntly put it, "In nations where barbers, hairstylists, and cosmetologists have joined attorneys and physicians in securing state… licensing, the question naturally arises why many librarians have not done the same" (p. 123).

Closely tied to the competency assurance argument is the concern that a librarian's knowledge, skills, and abilities can become outdated due to rapid technological change (Griffiths & King, 1986, pp. 255-256; Ingalls & Sivak, 2005). If this became the norm, dire consequences are predicted. "[R]apidly expanding, varying resources and services in the digital age also mean expanding mistakes and uneven, often poor service standards" (Brumley, 2007, p. 46). Outdated competencies could lead to the rather ironic problem of librarians becoming impediments to information. Thus, certification supporters advocate updating knowledge, skills, and abilities through certification, lest they become obsolete. In Lynch's (2008) estimation, "As the profession has changed and become more technologically sophisticated,… continuing education programs have been developed, and growing interest in certification programs has emerged" (p. 948). In line with this assessment, Griffiths and King (1986) held that "information professionals must continually update and expand their competencies" (p. 256) to perform effectively in the rapidly changing Information Age. By way of post-graduate certification, certified librarians would effectively affirm that they are competent and knowledgeable to provide high quality information services in the 21st century.

Remedy MLIS deficiencies. Concern over obsolete competencies ties into another justification for certification: the alleged deficiency of the MLIS

degree. The MLIS draws the ire of continuing education advocates and supporters of certification. Criticism of the MLIS degree is a fashionable topic in the literature (Ingalls & Sivak, 2005; Swigger, 2010). A recurring thread suggests that the MLIS inadequately prepares librarians for a library service *career*; rather, critics contend it prepares one for *entrance* into the profession (Ingalls & Sivak, 2005, p. 129; Low, 1996, p. 14; Moran, 2003, p. 4). According to Johannah Sherrer (in Low, 1996), "The MLS is relevant if it is regarded as the starting point rather than a capstone of learning. Its value will rest in its ability to concern itself with issues of theory, philosophy of service, history of information… and… technology" (p. 14). Willet (1984) offered a contrary viewpoint, saying, "Some librarians consider the M.L.S. a weak degree because its content is technical rather than academic" (p. 14). Divergent assessments notwithstanding, these arguments lead to the same conclusion: that possessing the MLIS alone is insufficient. Certification is proposed as a cost-effective, practical solution to make up for MLIS deficiencies (Watkins, 1998, p. 11). It is argued that through certification programs, librarians—both novice and seasoned—can augment their competencies with contemporary "industry-specific training" that may not have been available during library school (Ingalls & Sivak, 2005, pp. 130-132). Thus, certification remedies problems relating to outdated knowledge, skills, and abilities, while encouraging continuing professional development, one of the ALA's Core Competencies of Librarianship. Building upon this notion, Conant (1980) speculated that certification would be mutually beneficial to practitioners and to MLIS programs:

> Career education to be effective must be systematic. Periodic certification of librarians tied to a series of formal education requirements would sustain a system of career education. So would certification examinations for selected specialties and responsibilities. Such certification requirements would encourage the development of appropriate courses in library schools and in the professional associations. (pp. 173-174)

In this regard, post-graduate certification ensures high quality service by supplementing and enhancing the "static knowledge" afforded in library school.

Align librarianship with other professions. A third justification is that certification brings librarianship in line with other professions that require practitioners to obtain post-graduate credentials (Carson, 1997; Kraemer, 1948; Williamson, 1923). As explained in the previous section, certification supporters believe that demonstrating high quality service means doing more than completing the initial graduate degree (Burr, 1977; Carson, 1997). According to Martin (1994):

> [T]he mere possession of a degree… does not, in itself, communicate… important values in other professions; why do we assume that librarianship is different, and that we can do with a single degree what other professions must strive for with a formal program of certification and continuing education? (p. 567)

Examples of other professions requiring post-graduate credentials are cited extensively in the literature; they include medicine and nursing (Burr, 1977; Carson, 1997; Lindberg, 1990; Williamson, 1923), law (Burr, 1997; Carson, 1997; Crowley, 2008; Williamson, 1923), accounting (Burr, 1997; Lindberg, 1990; Martin, 1994; Williamson, 1923), and teaching (Kraemer, 1948; Williamson, 1923), to name a few. In all of these examples, the certification/licensure requirements perform the dual role of protecting public welfare and shielding practitioners from liability (Goggin, 1993, p. 187). Aligning librarianship with other professions by way of post-graduate credentialing has two essential benefits. Firstly, it delineates the boundaries of the profession, helping define librarians' roles in terms of service expectations and in relation to paraprofessional personnel (Grady, 2009; Jordan, 1948, pp. 114-115; Lindberg, 1990, p. 157; Williamson, 1923, p. 4). Secondly, it "safeguards" information seekers from unqualified practitioners by requiring librarians to demonstrate that they possess core competencies (Kraemer, 1948, p. 157; Williamson, 1923, p. 124). Possession of post-graduate certification, then, would lead to more reliable information transactions and the provision of higher quality services.

Improve professional status. Librarianship continues to be a misunderstood profession, rife with gender stereotypes and subject to anachronistic misconceptions. Library advocates have strived to improve the public image of librarians through assorted professionalization measures, including certification (Goggin, 1993, p. 189; Lindberg, 1990, p. 157). Professional status enhancement relates closely to the goal of aligning librarianship with other professions: by gaining prestige, librarianship inches closer to disciplines like law and medicine, often described in the literature as "the 'true' professions" (Willet, 1984, p. 19). Image enhancement is not limited to professions whose practitioners possess the "doctor" title, either. According to Carson (1997), "Other professions that have increased their status after instituting licensing and certification include nurses, engineers, accountants, and actuaries" (p. 14).

Certification supporters contend that the benefits of greater prestige apply to individual practitioners and to the larger LIS field. Commenting on

practitioners, Swigger (2010) said "Certification of individual librarians… is based on the individual's competence… Individual certification… would make librarianship more like the higher-status professions" (p. 146). Jordan (1948) argued that a trickle-down effect would reach the practitioner only after the profession embraced certification:

> No certification program of or by itself claims or promises to raise the status, standards, or prestige of a single individual, but it does raise the level of the group and as this level is raised to a professional status, the prestige inherent in any recognized profession cloaks the individual member. (p. 113)

In either conception, supporters say improved status via post-graduate certification will boost librarian salaries, making librarianship a financially attractive profession (Burr, 1977, p. 1729; Jordan, 1948, pp. 112-113; Martin, 1994). In Kraemer's (1948) estimation, "Raising the prestige of the profession and protecting the competent employee are economic reasons for desiring protection by certification laws" (p. 158). Grady (2009, pp. 241-243), Jordan (1948, p. 115) and Goggin (1993, p. 189) agreed that strengthening librarian salaries is a key step to recruiting the best candidates into a library service career. Enhancing the salaries and public image of librarians are measures designed to attract more competitive candidates to LIS careers and to foster greater career satisfaction among practitioners. Both of these objectives are envisaged as ways to elicit higher quality services from librarians.

Arguments Opposing Certification

Opponents refute the above arguments, saying certification: 1) does not ensure competency; 2) undermines the MLIS; 3) is unfeasible; and 4) does not improve professional status.

No competency assurance. Opponents of certification maintain that post-graduate credentials in the form of either certification or licensure, do not guarantee competency in practitioners (Berg, 1977; Berry, 2001). There is considerable skepticism in the literature over how "competency" for library service is defined and whether a set of pre-determined knowledge, skills, and abilities can accurately measure performance (Robbins-Carter & Seavey, 1986, p. 570; Thomas et al., 1981, p. 183). Griffiths and King (1986) observed that "it is implied that certification denotes a competent individual. What characterizes competent on-the-job performance is seldom mentioned in connection with

certification and, to our knowledge, has not been defined" (p. 352). Stripling (2005) agreed and elaborated:

> Certification implies quality assurance. To assure quality, one must define the attributes of quality performance and then devise a measurement tool to assess achievement… The attributes for national certification can be described as competencies—what an applicant should know and be able to do…. If it is difficult to identify competencies that are applicable across the country, then it is even more difficult to develop a measurement instrument that is valid, reliable, and equitable. (p. 158)

Just as certification cannot guarantee competency in librarians, it also does not prevent incompetents from practicing (Gross, 1978). This is a matter of probability as much as it is a matter of fact. As Willet (1984) has pointed out, assuming reliable competency testing measures are ever developed, it would be "statistically impossible" for these exams to screen out all incompetents (p. 19). Furthermore, professions with existing certification/licensing requirements—the often-cited fields of law and medicine, for example—still harbor careless, unscrupulous, and incompetent practitioners (Goggin, 1993, p. 189). Today, lawyers still get disbarred, doctors still lose their medical licenses, and so forth. Therefore, the claimed assurance of competency by way of certification or licensing is highly doubtful (Gross, 1978, p. 1014). Gerhardt's (1978) position crystallized this perspective:

> [A]ll the talk about "competency-based" requirements does not insure competency on the part of the practitioners. If this were so, then none of the self-certifying occupations or professions would have an incompetent among them – no malpracticing physicians, surgeons, lawyers, or public accountants. So, every time someone urging yet another certification model or licensing procedure for librarians suggests that this activity is for the protection of the public… , it is quite proper to guffaw… (p. 4)

Viewed critically, then, certification supporters are demanding drastic structural changes to librarians' education and training without providing clear justification or evidence for the changes. No consensus has been reached defining "certifiable competencies" or explaining how post-graduate certification ensures high quality services.

Certification undermines the MLIS. U.S. librarian education has had a turbulent history. What began as a career aligned with the clerical trades has in the last century developed into a bona fide profession (Rubin, 2010, pp. 77-126).

This is largely due to the creation of the MLIS degree. "Most scholars of the sociology of professions agree that professional education is located principally at the graduate level. Librarianship was a leader field on the basis of this criteria," having required the master's degree, in addition to possession of a bachelor's degree, as early as 1951 (Robbins-Carter & Seavey, 1986, p. 568). Moreover, library degree programs stay relevant because they evolve with the times. For example, as society moved into the Information Age, the graduate library degree updated its curriculum and refined the degree nomenclature (Master of Arts (MA) to Master of Library Science (MLS) to MLIS and Master of Science in Information (MSI)) to reflect the shift towards information and knowledge economies. If MLIS programs stay current by updating their curriculums in response to emerging issues; providing a balanced offering of theory, methods, and practice; adapting to technological changes; and, reaffirming ethics and values, then many consider graduate library programs the best training ground for future librarians (Crowley, 2008; Kavanaugh & Wescott, 1951, p. 203; Nussbaumer, 2005).

Defenders of the MLIS therefore deride claims that librarian certification would ensure high quality service. If made into the new minimum service qualification, certification would undermine the foundational value of the MLIS by "predispos[ing] a changing profession to a greater degree of relative stagnation" (Griffiths & King, 1986, p. 358). Considering this possibility led Crowley (2008) to lament that "the MLS, MLIS, or IS master's degrees from ALA-accredited programs will lose their already limited attraction" (p. 10). Rather than ensuring the provision of high quality services, mandatory post-graduate certification could destabilize the meaning, value, and culture of library school education.

Librarianship is too broad to certify. Certification opponents dismiss claims that certification brings librarianship closer to other professions, arguing that library service is a field too broad to certify (Goggin, 1993, p. 189; Griffiths & King, 1986). Having no "umbrella definition," librarianship means different things in different settings (Gerhardt, 1978, p. 4). Consider the array of subjects librarians deal with and the variety of institutions in which they work, from elementary schools and universities, to museums and archives, to military installations and prisons (Crowley, 2008, pp. 122-125; Ojala, 2003). "Consequently, there is little uniformity upon which to build 'baseline' [post-graduate] credentials for the profession as a whole" (Griffiths & King, 1986, p. 349). Even if "certifiable competencies" for librarians could be identified, the differences in cultures and norms across the U.S. would make it difficult to apply national certification standards in some local settings (Kavanaugh & Wescott, 1951, pp. 203-205; Willet, 1984, p. 17).

The frequent comparison to post-graduate credentialing for lawyers and doctors is dismissed on the grounds that those certification/licensing requirements act as insurance against liabilities inherent in those professions. One's ability to grasp volumes of updated case law and current medical literature and procedures, for example, will reflect directly upon the effectiveness of the legal or medical services provided (Estabrook, 1977, p. 218). In this way, certification and licensing of lawyers and doctors "contribut[e] directly or immediately to [protecting] life or welfare" (Jordan, 1948, p. 111). Drawing a keen distinction, Griffiths and King (1986) observed: "Unlike many other professions, however, the information profession can be said to provide *an intangible service* that rarely leads to a product or result obvious to the service recipient, let alone a standardized product" (p. 343, emphasis added). It would be dubious to claim that the provision of information is a matter of life and limb (though it might be on rare occasions). Opponents therefore dismiss calls for post-graduate certification and the presumption that it ensures high quality service based on the priorities of the law and medical professions as overwrought hyperbole.

No status/image improvement. Finally, opponents reject the claim that certification enhances status through improvements to salary, career stability, and public image. Berry (2003) doubted certification would serve as effective leverage in hiring and pay considerations (p. 8). That is because salary, employment, promotions, and retention are decisions residing, to a large extent, beyond the jurisdiction of the library profession. As Nussbaumer (2005) explained, "[S]alaries are influenced by the macro- and micro-environment, which are outside the control of certification" (pp. 140-141). "Given the fluctuating financial situation of many libraries, it would be unreasonable to expect certification would give librarians greater job security" (Willet, 1984, pp. 19-20). Mass layoffs of certified teacher-librarians nationwide attest to this sobering fact (Gerhardt, 1978; Tobar, 2011; Willet, 1984, p. 20).

Certification opponents do not refute that the LIS field suffers from a poor public image; they do, however, reject the claim that certification would solve that problem (Berry, 2001; Nussbaumer, 2005). It is hard to understand how certification would improve public perceptions of librarians when the very definition and purpose of librarian certification remain unclear. As Griffiths and King (1986) argued:

> When credentials are based upon vague… criteria or are not validly linked to competent on-the-job performance, individuals who receive these credentials run the risk of expending time and effort… to satisfy criteria that may lack relevance to their jobs… The profession in question runs the

> risk of authorizing the credentialed individuals as competent to practice when, in fact, they may not be competent. (pp. 355-356)

The lack of convincing evidence for the need to certify helps neither the practitioner nor the profession. One cannot expect an improved public image by way of certification if the LIS field cannot adequately explain or justify the requirement to begin with. To change public perceptions, Nussbaumer (2005) advised librarians to disregard "credential[s] that will have little, if any, influence on their perceptions" and instead focus on delivering "consistent, client focused, constant and clear" services (p. 142). Objectives such as these, and the general goal of providing the highest quality information services, can be achieved without the benefit of additional "titles" gained through post-graduate certification.

Analysis and Position

Both sides of the certification debate offer impassioned stances. Supporters and opponents of certification have in mind the best interests of librarians serving as the public face of the LIS profession nationwide, as well as library patrons who seek out their services. Advocacy can be painful, divisive, and sometimes fruitless, so their efforts are to be commended. That said, after examining both sides of this debate, the case for librarian certification is unconvincing. In my assessment, the demands of certification supporters demonstrate their insecurities over librarians' evolving role and a lack of consideration of the expansive bureaucracy that would be created if certification became a condition of professional practice. In the end, arguments for national librarian certification remain unpersuasive because they are based on speculation, not evidence.

Librarianship in the 21st century is more complex than ever before. Librarian education, moreover, has gone through considerable upheaval since the birth of the library science degree. The current trend toward digitization portends continuing evolution and revolution in libraries. Thus, the issue of librarians' ability to deliver high quality service is a paramount concern at this juncture. However, this genuine concern is being exaggerated to the detriment of the LIS field. "It would seem from the literature that librarians struggle excessively to create the outward signs of professional identification" (Robbins-Carter & Seavey, 1986, p. 561). Such professional insecurity is manifested in the persistent calls for librarian certification. The insecurity is evident in the way certification supporters concern themselves with public perceptions and alignment of librarianship with other professions—conditions which are largely out of their control. Thomas et al. (1981) described these tendencies as "a desperate attempt to validate librarianship as a profession" and "librarians compensat[ing] for their

inability to demonstrate the value of their skills" (p. 183). Agonizing over the rightful place of librarians within the professional spectrum distracts from the far more important and timely task of finding ways to improve library services in the 21st century. As Nussbaumer (2005) stated, "[I]nstead of writing endless apologetics for our existence, we need to blow our own horns and tell everyone how great we really are. Within this context, I do not see how the process of certification will contribute to the profession" (p. 139).

What is more, certification supporters do not acknowledge the expansive bureaucracy that would be created to support a system of national librarian certification. By virtue of its size and function, the ALA would be the likely organization to develop and administer a post-graduate certification program. As it stands today, ALA membership is entirely voluntary. If certification were to become a nationwide requirement, however, this would compel librarians to join the ALA. Such a requirement could be problematic for several reasons: it entails requisite payment of annual dues and the provision of one's private personal information as a condition of membership; practitioners disagreeing with ALA policies and positions may have to sacrifice their principles in the interest of career survival; and it creates yet another bureaucracy for practitioners, employers, and the public to navigate. This last point warrants elaboration.

Librarian certification or licensing would be trivial without the backing of some regulatory authority. Passage of certification/licensing requirements would very likely set in motion several public and private processes toward that end. As Crowley (2008) described, "[L]aws will be passed by legislatures to create new certification approaches… Afterward, new… regulations will be issued, with the period of time for public comment, by state library agencies to implement new… certification requirements for professional librarians" (p. 9). The resulting certification process would likely entail an exam, perhaps supplemented by interviews, a portfolio, and maintenance of continuing education credits. All of this comes with requisite costs in terms of time, effort, and money. Freeman (1994) identified two significant "logistical and bureaucratic" problems if this process is implemented: the ALA would have to ensure equitable access to the examination in terms of cost and testing locations; and the ALA, now serving in a gate-keeper function, would have to "police" the certified cadre and perhaps even take disciplinary measures against practitioners who violate professional standards (p. 28). This last function significantly expands the ALA's power. In Berg's (1977) view, this new arrangement results in a tenuous "dependency relationship" between librarians and the ALA, adding, "The history of regulatory procedures in many jurisdictions and on many issues, both nationally and statewide, suggests that regulation generates at least as many problems as it solves" (p. 90).

This problematic regulatory aspect has not dissuaded certification supporters. On the contrary, they have continued to advance the certification cause despite the fact that the data are not in their favor. The certainty with which supporters of certification demand its implementation belies the absence of "compelling evidence" to support their stance (Berry, 2001, p. 96). Early on in the debate, Tai (1925) observed: "Whether the national certification system of librarianship will be useful or not depends upon certain objective measurements scientifically valid and reliable. So far the arguments for [certification] are chiefly emotional and subjective in nature" (p. 130). Arguing for certification, Kraemer (1948) nevertheless admitted that "most of the material published on the subject of certification has been an expression of opinion rather than a factual study" (p. 169). She recommended comparative studies of certified and non-certified librarians to assess competence (Kraemer, 1948, p. 169). While these studies were never undertaken, other studies conducted since then have not found certification necessary. In an early study by Kavanaugh and Westcott (1951), there was consensus among the librarians surveyed in favor of university-based library school education rather than certification. Boaz's (1978) study querying library school deans and faculty about future trends found that less than half of the respondents thought mandatory certification was "probable;" the need for certification fell between "neutral" and "desirable" (pp. 318-319). According to Nussbaumer (2005), a study of the archival field "found little correlation between certification and salary scales" (p. 140). The absence of compelling evidence justifying national librarian certification cannot be disregarded.

In light of these findings, and after a careful review of the literature, it becomes apparent that arguments for national librarian certification remain unconvincing. Librarian certification is a cause célèbre advanced without the benefit of evidence or corroborative data. While they may have good intentions, certification supporters offer essentially conjecture and aspiration. These are insufficient grounds to fundamentally alter the education and training of librarians.

Conclusion

This paper examined whether certification of librarians is necessary to ensure high quality service. The paper reviewed the purpose of certification in other professions, the history of librarian certification initiatives in the U.S., and the arguments supporting and opposing national librarian certification. Upon reviewing the literature, I concluded that certification supporters: 1) evince an underlying insecurity about the librarian's evolving role, 2) fail to consider the expansive bureaucracy certification would create, and 3) offer no evidentiary

basis to support certification. Based on this critical assessment, I concluded that librarian certification is not necessary to ensure high quality service.

Though the case for certification is unconvincing, I do acknowledge that improving service delivery, encouraging professional development, and enhancing librarians' salaries are important objectives. However, I interpret these as means to a greater end; that of enhancing the librarian's role, importance, and impact in the 21st century. Let us not pin our hopes on an additional "title" to achieve this end. Instead, librarians should consider taking other proactive steps; for example, getting out from behind the reference desk to effect the change they want to see. Librarians must establish stronger relationships with library schools, alumni, and the ever-widening array of institutions that employ librarians, in order to communicate to library educators the competencies future librarians must possess. Librarians must take advantage of new technologies to market library services to a wider audience, especially to underserved populations. Librarians, when away from the reference desk, must drop the safe harbor of "professional objectivity" and become more politically active. Finally, librarians must lobby local, state, and federal leaders for increased library support, and remind them that libraries, librarians, and paraprofessional personnel contribute greatly to the civic, cultural, and educational well-being of the community.

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An Exploratory Study of Online Information Regarding Colony Collapse Disorder

Meredith K. Boehm
University of Tennessee - Knoxville, mboehm@utk.edu

An Exploratory Study of Online Information Regarding Colony Collapse Disorder

In Fall 2006, the National Research Council submitted a report covering the emergence of a phenomenon called Colony Collapse Disorder (CCD). This problem is significant because it affects the pollination of necessary crops and the production of food in America and worldwide. The term CCD defines specific characteristics of the nationwide deaths of honey bee colonies in the last decade. Adult bees often disappear from the hive and die, leaving the colony weak and vulnerable to disease.

At this time there are many web pages, campaigns, and multimedia presentations about CCD available to information seeking citizens, but there is no existing way to identify the main sources of information on the topic. This study will evaluate the landscape of web-based information available that addresses CCD. The purpose of the exploration is to understand the types, topics, and formats of on-line information available to users with specific information needs and to address the comprehensiveness of the information that is available on the web. The study's results will enable discussion about specific strengths and weaknesses of the major entities that provide information about CCD.

Introduction and Statement of the Problem

Since 2004, farmers and apiculturists (bee experts) across the nation have experienced massive declines in their managed European honey bee populations as a result of CCD. The North American Pollinator Protection Campaign (NAPPC) estimates the loss in the last decade to be between 50 and 90 percent of managed colonies (NAPPC, 2007). This loss has deep implications for the nation and the sustainability of the environment. Honey bees are major pollinators of crops such as almonds, fruit trees, and alfalfa and almost a third of the nation's food supply depends on honey bee pollination. Thus, CCD is of major environmental, agricultural, economic, and political concern. The cause or causes of CCD are uncertain. Environmental scientists and agriculturalists have developed many different theories about CCD and its origins. With the rise of CCD came a rise in concerns over equitable dissemination of information about CCD to public information seekers.

Frank Fischer's (2000) book, *Citizens, Experts and the Environment,* introduces the term "wicked" to describe the nature of environmental problems like CCD. "Wicked problems" are defined as being uncertain in cause, having many stakeholders with conflicting interests, and having no foreseeable solution (p. 136). For wicked problems, quality information dissemination becomes essential to ensure public understanding of current research on the "wickedness"

of the situation. In the face of conflicting expert opinions of empirical research interpretations, such as those surrounding CCD, Fischer notes that citizens rely on their "socio-cultural assessment of the factors" (Fischer, 2000, p.137). Industry, political agendas, and the media shape these socio-culturally constructed views and citizens' understanding of the issues.

The Internet has become the major vehicle for the government to provide the most information to the most people in the shortest amount of time. As Jobe (2006) notes, "technology, in the form of the Internet, has enabled federal agencies and others to deliver detailed data, bibliographic databases, and publications in a cost effective manner" (p. 257). The World Wide Web allows users to explore material from the government (and others) instantaneously through the aid of hyperlinks and downloadable documents. "World Wide Web sites offer several advantages for disseminating information on a fast-changing technical topic, including their global accessibility, and their ability to update information frequently, incorporate multimedia formats, and link to networks of other sites" (Byrne et al., 2002. p. 293). The webpage can lead the user to numerous articles, multimedia applications, and data sets. Despite all the information available, however, an environmental organization or governmental body may not provide a comprehensive picture of a complex and uncertain problem such as CCD to all types of information seekers.

Existing studies explore the information dissemination practices for wildlife agency websites at the state level. These studies address other "wicked problems" similar to CCD, including diseases like Chronic Wasting Disease (Eschenfelder & Miller, 2007). There is also research regarding the media's coverage of CCD (Cho, 2010). There remains a need for exploration of the online communication of CCD information by environmental agency web resources at the federal level, among other things. CCD is a topic of current interest in the agricultural and biodiversity research fields and the study of CCD information dissemination practices will be applicable to many wicked problems. This study addresses different information "packages" offered for different types of users. The goal of this study is to inform future research addressing construction of federal government science electronic information, by finding strengths and weaknesses in the current information landscape.

Literature Review

Environmental science communication literature has numerous dimensions that relate to the study of uncertainty, the public sphere, and wicked problems. In post-normal science theory, a concept developed by Funtowicz and Ravetz (1999, 2003), research "focuses on aspects of problem solving that tend to be neglected in traditional accounts of scientific practice: uncertainty, value loading, and a

plurality of legitimate perspectives" (Funtowicz & Ravetz, 2003, p.1). Post-normal science recognizes the current disconnect between the scientific community and a public understanding of science. As scientific studies have had less impact on public policy, environmental communications scholars in Europe and worldwide recognized the inherent need for public involvement. In the perspective of post-normal science, the equitability of information dissemination is essential because of the complexity of an issue like CCD, the impact that the issue has on stakeholders, and the value added by citizens giving insight to the problem solving network. Gregory and Miller (1998) state, "for citizens who want to take part in the democratic process of technological society, all the science that they need to know about is controversial; so it is the mess, the disagreements, and the uncertainties of science that matter most to the public sphere" (p.61).

When looking at past practices of government information dissemination and the adoption of the website as the medium of choice for maximum potential citizen engagement, the field of communication lacks studies that evaluate the characteristics of these governmental web pages. To fill that void, this study focuses on the needs of the spectrum of CCD information-seeking citizens and the federal e-government website's role in a network of CCD information providers. This study addresses the need to go beyond the reporting of scientific data to examine the information transmission vehicle, a topic requiring deliberation by those outside of the scientific community.

To understand the term "uncertainty" as it applies to environmental problems like CCD, Maxim and van der Sluijs (2007) conducted a case study of honey bee risk from insecticide. Their paper discusses a proposed information framework, called Knowledge Quality Assessment (KQA). Maxim and van der Sluijs test the KQA framework by applying it to a situation where policy makers are involved in communicating about uncertainty and are invested in fostering cooperation among French stakeholders. The framework to assess the quality of the knowledge importantly assessed the information that the individuals used to engage in deliberation. However, Maxim and van der Sluijs address only one area of CCD and one very specific information user group, so their study does not address the needs of the information seeking public beyond the specific French policy-makers.

Jasanoff (2003) discusses the need for a less objective, more inclusive dimension to science and better public engagement in science communication. Her article, "Technologies of Humility," discusses the incongruencies between ever-increasing access to new technology and the old habits of scholarly hierarchy and exclusion that persist in science and government. Jasanoff proposes "a framework to bring the human elements of morality and subjectivity back into the discussion of science and technology as opposed to the 'Technologies of Hubris' disconnecting science from such human qualities" (p. 240). Her four key elements

for "technologies of humility"—technologies that are inclusive to the public as opposed to exclusive—are: framing, vulnerability, distribution, and learning (Jasanoff, 2003). As an editorial on the current socio-cultural treatment of science in the United States, the article describes the status of scientific information available to the public within the realm of a public understanding of science. Her proposal can guide exploration of scientific information dissemination, including in the CCD context. Her philosophy applies to wicked problems in all areas of scientific inquiry, and influences the need for further studies on information resources for wicked problems such as CCD.

Bradshaw and Borchers' (2000) article, "Uncertainty as Information," studies the differences between scientific and government views on uncertainty communication. The study uses the phrase "science-policy gap" to describe the "dysfunctional aspects of the science-policy interface" (Bradshaw & Borchers, 2000, p. 2). In particular, the authors examine Intergovernmental Panel on Climate Change (IPCC) reports, applying theories of cognitive dissonance and volition to explain why uncertainty creates doubt and mistrust between groups. Using a scale of increasing complexity and uncertainty, Bradshaw and Borchers chart the types of environmental controversies and where they rate on this scale. CCD information could be evaluated using this scale; however, the dynamics of the public sphere and the industrial sector are left unexamined in this case. This means that important stakeholders are not considered. A more complete analysis is needed to gain a comprehensive perspective.

Cho's (2010) article, "Silence of the Bees," is a survey of media representations of CCD. Cho discusses the differences between the portrayal of the issue in the press and in the scientific scholarly journals. Specifically, Cho engages in content analysis of science journal articles that discuss CCD in contrast to "U.S. prestige press" articles that discuss CCD. In so doing, Cho examines differences in the number of publications, the discussion types, and word choice over the two year period from 2007- 2009.

In a case study on Chronic Wasting Disease (CWD), Eschenfelder and Miller (2007) explore the ways websites transmit text-based environmental information from state wildlife agencies to the public. The study analyzes how information transmission fosters relationships between the government and citizens. The study assesses the variations in scope of text information available on four state websites by employing a specific framework constructed by the authors. Titled the Government Information Valuation (GIV) framework, the information seeking public is placed into specific categories based on their role in the use of information about CWD. Eschenfelder and Miller expand on an earlier proposal that "increased governmental use of technology will lead in part to a period of 'information abundance' facilitating citizen and civil society involvement in governance" (2007, p.64). Eschenfelder and Miller (2007) assert

that the current level of agency analysis is insufficient because it does not take into account the form and specific content of the documents in relation to the intended audience. The authors make connections between the GIV framework and the information types and topics but clear distinctions are not made regarding the topics per content type. Applying this aspect to the analysis of available information content produces a greater depth to the discussion by taking the content analysis a step further.

The Eschenfelder and Miller study is significant to the exploration of CCD information because of the similarities between CWD and CCD. Both phenomena have highly contested views regarding their causes and initial definitions. Both phenomena influence rules and regulations regarding the treatment of the natural resources within a specific region. Additionally, there are myriad resources on both problems, offering information in different formats and perspectives. The current exploratory study will use the GIV framework to define the public sphere by organizing citizen user groups by role and need. The categories of citizens are: private, attentive, deliberative, and publisher. The similarity between CWD and CCD makes the GIV framework easily adaptable to the needs of the CCD information seekers on the Internet.

For Funtowicz and Ravetz (1999, 2003) and Maxim and van der Sluijs (2007), scientific and social uncertainties are characteristic of post-normal science theory. Jasanoff (2003) calls for a new technology that casts off the old hierarchical constructs to make room for these new science theories. Bradshaw and Borchers (2000) look at the gap between science and government, while Cho (2010) looks at the gap between peer-reviewed scientific literature about CCD and the mass media's portrayal of the issue. These articles and ideologies present an area for inquiry into the communication parameters of the federal government websites that address CCD. Very little prior research looks at the federal website, the information seeker, and CCD information dissemination.

The present study addressed the following research questions:

- Do the websites for the Environmental Protection Agency (EPA), the United States Department of Agriculture (USDA), the United States Fish and Wildlife Service (US FWS), and the United States Geological Survey's (USGS) National Biological Information Infrastructure (NBII), present CCD comprehensively to a spectrum of citizen user groups?
- What are the information topics available on these four websites?
- What material is missing or incomplete from the websites?

Methodology

The research method included a content analysis comparing information content on the four web pages, using the information seeker requirements based on the GIV framework of citizen user needs.

The four federal government entities included:

- United States Department of Agriculture (USDA)
- Environmental Protection Agency (EPA)
- National Biological Information Infrastructure (NBII)[1] from the United States Geological Survey (USGS)
- United States Fish and Wildlife Service (US FWS)

Step 1

At the home page for each federal government organization's website,[2] the author entered the query "CCD" in the available search box, thereby conducting a general search for a web page with CCD information. "CCD" was chosen instead of Colony Collapse Disorder because an information seeker often knows only the abbreviation, not the full name of the phenomenon. Searching under the initials also ruled out other "colonies" and "disorders" which might have appeared.

Each site directed the user to a list of options. The author chose the first internal webpage that had CCD in the title from the list of options. In many cases the first choices were PDF files or the link redirected the user to other places, but in each case the author determined the location of the main page of CCD information.[3]

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[1] At the onset of research in January 2011 and the initial webpage analysis in May 2011, the NBII was a fully functioning entity. The program was cancelled in the fall of 2011. The NBII website is no longer available from the original source URL; however, archived copies of the site are available from Stanford University's Fugitive U.S. Agencies collection, cataloged at http://archive-it.org/collections/2361 . The situation is described by J. R. Jacobs at http://freegovinfo.info/node/3613 .

[2] The four organizations' website home portals were:

- USDA: http://www.usda.gov/wps/portal/usda/usdahome
- EPA: http://www.epa.gov/
- NBII: http://www.nbii.gov/portal/server.pt?open=512&objID=236&mode=2&cached=true
- US FWS: http://www.fws.gov/

[3] The webpages were:

- USDA: http://www.ars.usda.gov/News/docs.htm?docid=15572
- EPA: http://www.epa.gov/pesticides/about/intheworks/honeybee.htm
- NBII:http://www.nbii.gov/portal/server.pt/community/threats_to_native_species/850/colony_collapse_disorder_%28ccd%29/3656

Step 2

For each organization, the author took an inventory of the contents of the CCD page. This inventory included all PDF documents and links to other pages both internal and external to the organization. This inventory defined the scope of the possible analysis. The author defined each webpage's information as the contents of the main page plus any material available for download and any links (either to another webpage or another website) located within the main page. This parameter was chosen to clearly define a specific window of information and to keep the amount of material manageable for analysis.

Step 3

The author conducted a comparison of the four federal organizations based on their websites' CCD information. This comparison evaluated similarities and differences in the content each entity provided and identified some possible specific roles and focal points of each organization. The author needed to clarify the general differences before assessing specific topics and types of materials available to the user. The author compared five general defining characteristics of each site. These characteristics were based on the initial observations of the material.

These characteristics are:

- The agency's definitive role within the U.S. government, as defined by the government
- The organization's primary focus or specialization
- A summary of the type of information the agency provided
- The agency's partnerships or affiliations
- The amount of internal and external links

Step 4

The author explored the content gathered from the inventories. An analysis of content similarities from the existing material facilitated identification of several specific types of content. From this inventory, the author developed a clear picture of what content each website provided and exposed areas where content was lacking.

The types of content identified included:

- Basic information
- Frequently asked questions

- US FWS: http://www.fws.gov/pollinators/Features/CCD.html

- Latest news and features
- Action plan or strategy
- Progress reports
- Multimedia information (photos, videos, podcasts, webinars)
- Links to external sites
- Links to internal pages
- Interactivity or interactive content
- Personal contact or administrator information
- Date the webpage was last updated

Step 5

In conjunction with the content type, the author identified content format as another area for analysis. Format is important because different user groups prefer and require specific formats. The author found and recorded several formats for future analysis and discussion.

Formats included:

- PDF files
- Sidebar lists
- Text boxes
- Paragraph text embedded on the page
- Hypertext
- Hyperlink
- JPEG/image file
- Audio file
- Data file (Microsoft Excel, etc.)

Step 6

The author chose one content type to compare the different topics each webpage discussed. The author chose "basic information" from the CCD page because it was available from all four sites in a simple format. The author compared the basic information for each organization and developed categories of topics. The author organized the subject matter based on paragraph sub-headings or beginning phrases when the sub-headings were not available. This comparison gave the author an overview of the differences and similarities in the scope of the subjects addressed by each agency website.

The information topics included:

- Introduction
- Issues (possible causes and solutions)

- Controversy
- Myths
- Research
- Institutional focus
- Resources
- Public involvement

Step 7

At this point, the author added the citizen spectrum into the analysis. The author used Eschenfelder and Miller (2007)'s GIV framework to match content type and topic with a variety of user groups. The author chose this framework because it classified citizens into four areas on a continuum of increasingly deeper engagement within the process of environmental problem-solving and policy-making. The study provided an example of the needs and activities of four user types. Table 1 defines the four citizen users' needs.

Table 1
Definitions of user action and information needs

GIV framework	Private Citizen	Attentive Citizen	Deliberative Citizen	Citizen Publisher
User activity and needs	Information for individual citizens to make private decisions or take private actions	Two-way flow of info; assessment of agencies' policies and performance; government collects citizen opinion for feedback to experts	Information to formulate articulate and defend in public forum; need a range of facts and interpretations for informed debate	Horizontal / multi-dimensional flow of information, civil society organization; government information is not the focus but supports and reflects the seeker's views.

Note: From left to right, the type of information for each type of citizen user is defined. The explanation includes the user activity and the type of information this requires. For an in-depth discussion of the characteristics of the citizen user groups please see Eschenfelder & Miller, 2007, Table 3, p. 29.

Step 8

The GIV description was used to name specific types of CCD information seekers within each category. In making customized connections, the author put the needs of the user into the context of CCD information seekers. Table 2 contextualizes citizen user needs.

Step 9

Two of the federal organizations defined certain user groups on their homepage; however, these defined user groups did not appear in all facets of the websites and did not appear on the CCD information pages. The categories did help the author define the users by providing the perspective of the particular organization. The organizations' designated citizen categories were considered and matched to the four types of citizens in the GIV framework.

Table 2
Roles specific to the CCD information-seeking citizen

GIV framework	Private Citizen	Attentive Citizen	Deliberative citizen	Citizen Publisher
Application to information seeker for CCD information	Teachers, consumers, gardeners, small business owners, hobbyist farmers and beekeepers	Small scale farmers and hobbyist beekeepers, consumer advocate, journalist (editorial), land use and planning experts	Environment analysts, economic and industry associates, grassroots organizations, community level leaders (e.g., mayor), beekeepers, journalist (non-editorial)	Researchers affiliated with universities and institutions, non-governmental organizations, policy analysts, agricultural engineers and apicultural experts, state inspectors, scientists from other fields, chemists

Note: From left to right, the citizen users are defined according to their particular roles within the context of CCD and their resulting information needs. The type and scope changes as the roles become more deeply involved with CCD research, maintenance and/or legislation.

Step 10

The author's final comparison took the four citizen categories of the GIV framework, now customized into CCD information seeking groups, and applied the types of information for each group as recommended by Eschenfelder and Miller (2007, p. 64). The author completed the comparison by comparing the amount of content types available on each website to the corresponding citizen

descriptions. This step gave a picture of general gaps in the content type required by each user group.

Results and Findings

Do the Websites for the EPA, the USDA, the US FWS, and the USGS's NBII Present Colony Collapse Disorder Comprehensively to a Spectrum of Citizen User Groups?

After completing the steps for the content analysis, the results show that the four federal government websites do cover many aspects of CCD information; however, the websites' information was not comprehensive as defined by the framework of the analysis. Table 3 shows the information content of each entity's website by relating the content to the spectrum of citizen user groups defined by the GIV framework. The US FWS and the NBII each leave an entire category of user without the information needed.

Table 3
Information contents organized by each federal entity by user group

	Private Citizen	Attentive Citizen	Deliberative citizen	Citizen-Publisher
USDA	10 core paragraphs 1 link to info 5 multimedia	2 progress reports 1 action plan	8 internal links 2 external links to info	10 links 1 assist: contact info
EPA	7 core paragraphs 3 pesticide specific 1 photo	1 USDA action plan 1 strategy	5 internal links 2 external links	5 links 1 partnership NAPPC 1 assist- pest info #
NBII	2-3 core paragraphs 1 photo	1 clear link to CRS report (2007)	41 links to external info	
US FWS	2-3 core paragraphs 1 photo		1 disc of research 9 internal links 4 external links	1 partnership implied 4 external links

Note: From left to right, a menu of the contents of each CCD web page that are most applicable to the citizen user group is shown.

What Are the Information Topics Available on These Four Webpages?

Of the seven information topics listed in step six of the analysis, the most covered topics include the introduction, the issues of potential causes and solutions, research, and institutional focus. All organizations mentioned and supplied a link to the USDA Agricultural Research Service (ARS) main CCD page. The US FWS and the USDA both mentioned and provided a link or information about the North American Pollinator Protection Campaign (NAPPC), a not-for profit affiliate of other biodiversity networks that initiates research and data collection to inform global policy.

What Material is Missing or Incomplete?

The author identified incomplete and/or missing information in four content areas.

Current information. The governmental webpages and the websites to which they link were all at least a year out of date, except for the EPA website, which was current. The majority of the articles and reports were from 2007. The US FWS had the least current materials, with information about meetings from 2005. It was not possible to tell when the NBII was last updated. The USDA and the EPA both had material last dated 2009.

Shared resources and links to partnerships. No organization directly mentioned any other of the organizations besides the USDA. The USDA provides several internal links to other related information, yet only one external resource link.

Public engagement resources. No website directly discussed participation tools for citizen involvement or provided specialized resources for communities. The author identified a lack of assistance for users who want to report information or request specific information needs (besides organizational contact information.) Table 3 displays data from the study organized according to user type.

Discussion about myths and controversial topics. Myths and controversial issues were not mentioned by any of the entities except for the USDA. The USDA page had a brief explanation about research on the myth of CCD and cell phone signals, clarifying the myth and the current understanding of the issue among apicultural experts.

Discussion

The data collected from this study of online information regarding CCD shows strengths and weaknesses of the information available to citizen user groups. The US FWS did not have any information applicable to the category of attentive citizen. According to the framework, this translates to a possible gap in information from the US FWS CCD page for information seekers such as hobbyist beekeepers, small-scale farmers, and other citizens who have a moderate level of involvement in relation to the phenomenon. The USGS's NBII did not have any information catering to the specific information needs of the citizen-publisher group. This translates to a possible gap in the information available from the NBII for individuals who have a very high level of involvement or need for involvement.

The USDA has the most information overall for all the user groups. This finding is consistent with the linking practices of the other entities. The EPA, the US FWS and the USGS'S NBII all provide links to the specific USDA webpage that was assessed in the study. Further analysis is needed to determine whether this finding suggests that the USDA is considered an authority within the information topic that was used (Basic information).

At the time of publication, two potential limitations of this study have been identified and require additional analysis within the framework that was developed for this exploratory study. The first is that the differences in the organizations' roles within the government do influence the funding, interpretation, and transmission of web-related information on CCD. In future extensions of this research, the author will work to include definitions of these differing responsibilities of the entities to account for variations and nuances of structure and function that exist but are not well known and cannot be assessed using content analysis. The second potential limitation is that the study was subject to the author's bias because it was a personal endeavor and the author applied his working knowledge of the phenomenon to create the applied criteria. A more in-depth study of information types, topics, and formats that are ubiquitous among the CCD webpage information will be conducted in a future study to reduce this limitation.

Conclusion

This introductory exploration seeks to understand the landscape of governmental information available that addresses Colony Collapse Disorder. The purpose of the exploration is to understand the types, topics, and formats of information available to a spectrum of users with specific information needs and to address the comprehensiveness of the information available. The framework for analysis was developed and tested as a determination of validity for future use in a larger study by the author in the spring of 2012. This initial study and the ten-step process

uncovered three areas to explore using a more complex derivation of the research process. The three findings include: the lack of current information, the need for network landscape mapping to understand the nuances of the connections between the entities, and the lack of interactivity and public engagement. The lack of current information seen in the dates on the webpages suggests that there is less attention overall to reporting the latest news to the public. Additionally, information seekers may run into repetition of information resources that are not suitable to their specific needs. Finally, the lack of interactivity and public engagement indicates that the public is not involved in discussion and deliberation of an issue that impacts them significantly. The information needs of the user groups will remain unclear if avenues for requests and comments are not available.

These three findings set the stage for the author's future study on the information provision related to the CCD phenomenon. The focus will be directed to the areas of content previously addressed, with the addition of a comprehensive analysis of clearly defined information types, topics, and formats. Discussion of Information Quality (IQ) aspects of website material is needed. IQ elements, including accuracy, source authority, currency, design and usability, and interactivity, will be defined by an IQ literature review and operationalized for contextual congruency. In addition, the author determined that the assessment should cover additional popular sources of information to compare and contrast with the government agency. Wikipedia's CCD page will be the fifth webpage for analysis. Finally, social network analysis will be applied using the external links of each entity. The study made clear that there was no recognized central source of CCD information online. This added analysis of the information network as a whole, combined with the relationships between the information providers, will present a more complex view of CCD information on the web.

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Using Organization Theory to Explore the Changing Role of Medical Libraries

Kathy J. Fatkin
Emporia State University, fatkin.kathy1@gmail.com

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Using Organization Theory to Explore the Changing Role of Medical Libraries

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Using Organization Theory to Explore the Changing Role of Medical Libraries

Some hospitals are closing their medical libraries while others are expanding their medical libraries with new information services. Information is an essential resource for quality healthcare and ranges from patient-specific data to diagnostic test results. Medical libraries provide hospital staff with knowledge-based information services to support patient care. Can organization theory explain the changes in United States (U.S.) medical libraries and the services professional librarians provide to the hospital staff?

This historical research study applies organization theory to describe how hospitals, medical libraries, and other health sciences librarians first appeared in American society, and how they changed and developed into today's high-tech organizations and professionals with a focus on cost-effective information services.

Organization theory developed into a specialized field after the translation of Max Weber's work on bureaucracy into English in 1946 (Scott & Davis, 2007). The theory can focus our view on how the healthcare system, hospitals, and, in particular, medical libraries, emerged in the U.S.; these institutions arose in response to changes in the environment, with new technologies, developing social and physical structures, and power struggles among their stakeholders.

Organization Theory

Organization theory is multidisciplinary, with sociologists, economists, political scientists, biologists, psychologists, and engineers contributing to the theory. Modernists, symbolic-interpretive, and postmodern scholars within these fields add to the field of organization theory (Hatch & Cunliffe, 2006). Each of these disciplines has developed a perspective of reality, influenced by the discipline's theories about what is knowable (ontology) and how we know it (epistemology). The various disciplines' perspectives reflect different assumptions about the nature of an organization (Hatch & Cunliffe, 2006).

The modernists' ontology is objectivism. Modernists accept an external reality that exists independently from our knowledge. Modernists believe that knowledge is discovered by using scientific methods of observation with valid and reliable measurements that allow us to test our understanding of the world. The modernist sees organizations as real entities operating in a real world where it is possible to test methods and techniques to improve effectiveness (Hatch & Cunliffe, 2006). Symbolic-interpretive researchers believe instead in an ontology of subjectivism, which suggests that nothing exists apart from our awareness of it. Symbolic-interpretive theorists believe that knowledge is constructed and can only be understood from the point of view of the individuals directly involved.

Accordingly, the "truth" shifts and changes through time as societies change. This group understands organizations to be constructed and reconstructed by their members, who apply meaning to the symbols and actions of people within the organization. The organization is a humanly-produced reality that is understandable as a social product (Berger & Luckmann, 1966). Finally, post-modern theorists' ontology is that the world appears to us through language and discourse. They describe knowledge as the accepted interpretation of meaning derived from individuals with power. Post-modern theorists see organization as texts that can be deconstructed and rewritten to reveal the viewpoints of those who are oppressed (Hatch & Cunliffe, 2006).

These various beliefs about knowledge and the nature of organizations provide useful lenses for considering the evolution of hospitals, medical libraries, and health sciences librarians in American society. Using multiple viewpoints for describing the changes in healthcare over time provides a better description of the various forces that shape the decisions stakeholders are now making about information services for today's hospitals.

All organization theorists conceptualize organizations as a part of a larger environment that supplies resources and absorbs goods and services. Within the organization, there are social structures that order activity, cultures that produce meaning, physical structures that support and constrain the organization's activity, and technology that produce goods and services (Hatch & Cunliffe, 2006). Hatch and Cunliffe (2006) describe these internal organizational concepts as interconnected and responsive to each other and to the external environment.

Modern organization theorists' overarching goal is to predict and control organizations. Symbolic-interpretive organization theorists instead seek to understand the meaning of the socially constructed organization. Postmodern organization theorists seek to expose the practices of those with power and encourage self-determination for those who have not found their voices. Each of these subsets of organization theory helps to examine and evaluate how American hospitals, medical librarians, and health sciences librarians have changed over time.

Evolution of American Hospitals

Hospitals are complex organizations with a rich history. Early American hospitals were charitable organizations, established by religious and ethnic groups to tend to the sick. Before the 1900s, hospitals were almshouses that served the sick sailor and other travelers who fell ill, or the poor who had no one to care for them (Starr, 1982). Families cared for their sick in their own homes; "those who had homes did not use hospitals" (Griffin & White, 2002, p. 5). With industrialization, work moved outside the home and it became difficult for

families to care for the sick. City flats and apartments had no space for a sickroom (Starr, 1982). The growth in hospital care was a response that fit the needs of the newly industrialized city. Organization theory considers how the environment influences organizational development. Aldrich (1979), a modernist organization theorist, studies the effect of the environment on organizations. His population ecology theory describes how external forces and the resources available in the environment create niches for the growth of organizations such as hospitals.

Wealthy industrialists and other donors funded early hospitals (from roughly 1760 to 1860) and they served on their boards of directors. These benefactors used hospital philanthropy as a way to convert their wealth into status; serving on the hospital board allowed donors a certain amount of power and influence (Starr, 1982). However, donations did not cover all the costs of hospitals, so the wealthiest patients were charged a premium price for private rooms. Other patients were cared for together in wards, either as paying patients or as charity patients. The social stigma associated with being in the hospital was eliminated when hospitals began to charge for services. During the great depression (1930s), the highest income patients had the highest hospital admission rates (Andersen, Rice & Kominski, 2001). The meaning of being a patient in the hospital changed from an association with poverty to an association with wealth. Hospitals became prominent institutions in their communities by scripting their roles and serving those with power. A different type of organization theory can help explain this change.

Weick, Sutcliffe and Obstfeld's (2005) symbolic-interpretive organization theory model of *sensemaking* describes how scripting a story makes an organization appear orderly and more understandable. The hospital story was revised from a charity that served only the poor to an organization that provided healthcare for all people. The wealthy donor and the private room patient dominated the discourse of the hospital, using postmodern theory as described by Jean-Francois Lyotard (Mitcham, 2005). These views of organization theory all apply to the transformation of the hospital in American society.

With the development of asepsis and anesthesia after the Civil War (1867-1930), surgery became safer and hospitals began to offer not only care for the sick, but the possibility of a cure. Growth in surgery "provided the basis for expansion and profit in hospital care" (Starr, 1982, p. 157) and the hospital came to be seen as the physician's workshop. Hospitals had the market advantage of providing facilities that could be used by many surgeons, without the necessity of organizing the physicians themselves (Griffith & White, 2002). The success of surgical technology created piecework in hospital care, as surgeons handed off the care of post-surgical patients to nurses for recovery. Curing became the domain of the doctor, while caring became the duty of the nurse (Ehrenreich & English,

1973). Organization theory is useful in examining these changes in the hospital organization.

Woodward (as cited in Hatch & Cunliffe, 2006, p. 146) was an early modernist organization theorist who linked production with technology; she looked at how mechanical technologies determined how work was performed. Depending on available technology, work was accomplished in small batches by a single worker or divided into pieces to hand off to other workers (Hatch & Cunliffe, 2006). Surgical technology changed the work that was performed in the hospital and the organization responded as predicted by modernist organization theory.

Further growth in technology in healthcare after World War II (1946-1960) created the need for administrators with business skills to lead the hospital (Starr, 1982). The hospital administration required physicians utilizing the hospital to meet certain standards for quality of care (Hader, 2011). Again, organization theory can help explain the unique division of decision-making in the hospital setting; where physicians direct the individual patient's care and administrators direct the hospital as an organization. Bourdieu's postmodern concept of organization structure (as cited in Hatch & Cunliffe, 2006, p. 124) as field (social space) and habitus (social position) is useful in describing the dual distribution of power in the hospital, split between physicians and administrators. According to Bourdieu, individuals with expert knowledge and skills have capital within the organizations' hierarchy and can exert power. Habitus provides the social hierarchy that determines the way the capital is controlled and determines the rules for exerting power in organizational relationships. In healthcare, the physician's power comes from the social capital associated with medicine, while administrators have the social capital of business knowledge. Competition and struggle between these social forces modified the structure of the hospital as an organization.

Evolution of American Medical Libraries

As the surgeon rose in prominence (1930-1960), the American College of Surgeons (ACS) began to set standards for hospitals in the U.S., including standards for libraries and librarians. In 1934, the ACS published a list of books recommended for the hospital library and described the need for a qualified librarian (Wolfgram, 1985). These earliest hospital libraries were collections of pooled medical texts that served the hospital's interns, physicians, and surgeons. The hospital was focused on improving the knowledge and skills of the doctor within the organization (Starr, 1982), with the hospital library serving as a storehouse of knowledge for doctors (Holst, 1991). With these libraries in place, a tradition of service to the medical staff was established (Holst, 1991).

After World War II, the ACS could no longer keep pace with the need to monitor hospitals. The ACS and other groups formed the Joint Commission on Accreditation of Hospitals, (now called simply the Joint Commission (JC)) to survey hospitals for quality. When the JC released its hospital standards in the *Accreditation Manual for Hospitals,* the JC required a medical library staffed with a competent librarian to meet the information needs of the medical staff (Bradley, 1983). Organization theory may be used to explain the need for the health science library in the hospital after the war. Jay Galbraith's modernist organization theory of information processing and technology explains that as technology increases in complexity more communication is required to mediate the relationships between structure, technology, and the environment (as cited in Hatch & Cunliffe, 2006, p. 167). The period after World War II included rapid growth in government funding for scientific research, including medical research (Starr, 1982). The medical librarian played an adaptive role for dissemination of information from the growing body of medical research to physicians.

In the 1960s, legislation enabled the development of a network of regional medical libraries. The Medical Library Assistance Act (MLAA) was passed to: (a) aid health science libraries to develop services and resources, and (b) to promote a national system of regional health sciences libraries accessible by all health professionals. The MLAA authorized the National Library of Medicine (NLM) to provide funds to accomplish these goals through grants to libraries. Regional resource libraries were established from existing medical libraries. The NLM coordinated the funding at the national level, but the regional resource libraries determined the programs to meet local needs. All the NLM regions relied on hospital librarians to act as intermediaries between health professionals and the information resources provided by local, regional, and national libraries. At that time, the number of hospital libraries increased from a core group of about 1,700 to about 2,000 hospital libraries, with the growth experienced predominantly among hospitals with 500 beds or fewer (Thibodeau & Funk, 2009). Funding from the Social Security Act for research and the requirement of the JC for hospital libraries spurred the creation of new hospital libraries (Holst, 1991). Organization theory explains how the impact of outside forces such as increased funding for research changed the hospital.

Laurence and Lorsch (1986) use modernist organization theory to describe how organizations respond to changes in their environment. The structure of the medical library changed as hospital staff requested more research-based information. The technology of information transfer shifted from books to journals. The librarians' role also changed as resource sharing became necessary to meet the information needs of the organization.

In the 1970s, medical libraries changed again with the advent of the Medical Literature Analysis and Retrieval System. At the system's creation, a

few large academic and regional medical libraries had remote access to the system through "dumb" terminals. Shortly thereafter, the system was renamed MEDLINE. By 1978, over 900 institutions had access to the MEDLINE database (Atlas, 2000). NLM regional staff trained medical librarians on how to use the required Boolean logic, controlled vocabularies, and command language needed to navigate the system. MEDLINE charged connection fees along with per character charges, so the librarian searcher would plan a literature search strategy carefully before typing into the database to control search costs. Librarians were early adopters of this new technology.

Again, organization theory helps explain the impact of a new technology on the medical library. According to Schein (2010), a symbolic-interpretive researcher, every organization has a group that represents the technology used in an organization. This is the engineering subculture, and with the creation of MEDLINE, librarians became more like engineers by interacting with the technology that changed access to journal information resources.

By the 1980s, mediated MEDLINE searches had reached a volume of two million searches a year (Atlas, 2000). Medical library staffing levels increased to match the demand, and librarians enjoyed the social capital that comes from possessing expert skills and special knowledge. Technology in the organization improved access to information via intermediaries and the hospital responded with fully staffed medical libraries. However, mediated searching was becoming too much of a constraint in connecting information with healthcare providers. Organizations operate within various constraints and organization theory addresses how constraints shape the organization. Simon (1973), a modernist, evaluated the organization as a social system. He found that constraints motivate participants to conform, but too much constraint limits the ability of the organization to respond to the environment.

In the 1990s, as personal computers were becoming common in the workplace, the NLM developed a personal computer interface for health professionals to do their own searching. Vice President Al Gore announced in 1997 that access to the PubMed version of the MEDLINE database would be offered free of charge on the World Wide Web. As a result, end-user searching became widespread and mediated searching decreased significantly (Atlas, 2000). The change in technology with personal computers produced the need for instruction in the use of online library resources and services. Many librarians added end-user instruction to their library services after the removal of the cost constraints to database searching.

Another modernist organization theory is useful to examine the adoption of technology in the hospital. Organization theorists Katz and Kahn apply open systems theory (as cited in Hatch & Cunliffe, 2006, p. 121) to explain how organizations adapt to changes in technology with support activities. Work is

distributed and integrated in the organization differently due to technological advancement.

Also in the 1990s, healthcare expenditures rose rapidly. The federal government began work on cost containment regulations to place greater financial accountability on hospitals. In a change in policy, Medicare no longer considered library services as a reimbursable expense and dropped its requirement of a medical librarian for hospital payments. The JC changed its accreditation requirements, allowing an onsite library or a cooperative arrangement for library services to provide hospital information services. More hospitals began to use contractors for their library services and medical libraries downsized or were closed (Thibodeau & Funk, 2009). Hospital library layoffs occurred as some hospitals reorganized and replaced librarians with clerical staff (Gilbert, 1991).

The hospital response to financial incentives is understandable by applying another modernist organization theory. Hospital buildings are designed for providing healthcare services; the medical library space is designed for both collecting and disseminating knowledge-based documents and services. Investments in buildings, equipment, and staff create structural inertia in organization theory, as described by Hannan and Freeman (1984). Hospitals are not particularly flexible due to this structural inertia, but they do respond to their environment. When knowledge-based documents are not required within the physical building, library space can be reallocated to another healthcare service.

Evidence-Based Practice in Healthcare

Even while some medical libraries were closing (1990 to present), other medical libraries were able to increase library services to support evidence-based practice. Rising healthcare costs and a need for quality improvement created a climate for change in healthcare delivery (Davis, 2010). The concept of evidence-based practice in healthcare began in the 1990s with Archie Cochrane, an epidemiologist who called for a system to produce research summaries to sort out the claims for various therapies in medicine (Jennings & Loan, 2001). His work inspired the creation of the Cochrane Library and the Cochrane Database of Systematic Reviews (Cleary-Holdforth & Leufer, 2008) which explicitly appraises evidence for interventions. Evidence-based practice uses the best scientific evidence, along with clinical experience and patient values and preferences, to guide patient care. It is a change from healthcare based on expert opinion (Davis, 2010). Medical librarians responded to this change by developing specific search techniques to locate evidence for practice (Klem & Weiss, 2005). Again, organization theory explains the librarians' adaptation to changes in the hospital environment. Weick (as cited in Hatch & Cunliffe, 2006, p. 127) uses the

symbolic-interpretive theory of organizational improvisation to describe how routines change in response to the needs of the organization.

By the late 1990s, evidence-based guidelines were being published to direct patient care. The healthcare professional was expected to select treatment based on current research-based guidelines, not personal preferences. Government payers and insurance providers were pushing for more standardized healthcare which did not vary illogically from region to region. Evidence-based guidelines reduced mortality in conditions such as heart attacks (Torpy, Lynm & Glass, 2009). This push for care based on research-based evidence and guidelines created new conflicts in the hospital organization. Modernist organization theorist Edgar Schein (2010) studied organizational subcultures and described how conflicting subcultures can reduce effectiveness in an organization.

A Veteran's Affairs hospital looked at hospital subcultures and the use of evidence-based guidelines. The researchers found the executive culture (i.e., hospital administrators and the chief of staff) described cost, market share, and efficiency in their statements about practice guidelines. The operator culture (i.e., staff physicians and nurses) described stress and time pressure, and made statements that the guidelines did not help. The engineering culture (i.e., physicians, nurses, and computer support staff who designed the guidelines) made statements about variability, capacity, and quality of the guidelines. As the researchers expected, the different cultures produced barriers to implementing evidence-based care (Smith, Francovich, & Gieselman, 2000). Organization theory explains how a strong leader with a commitment to safety and quality healthcare can unite the subcultures by creating a shared goal (Schein, 2010).

A supportive culture must be present to provide evidence-based care (Reavy & Tavernier, 2008). The "magnet designation" from the American Nurses Credentialing Center provides recognition that a hospital has a culture of evidence-based practice and a professional practice environment attractive to nurses and patients (Luzinski, 2011). Magnet programs encourage collaboration with librarians using multidisciplinary teams to gather and evaluate evidence for practice. As nurses move from their traditional patterns of care to evidence-based care, they deal with multiple barriers within the hospital organization. The complexity of finding and evaluating evidence for nursing care is challenging. Organizations respond to task complexity and interdependence with new structural relationships (Scott & Davis, 2007). Librarians have begun to promote services to nurses, and nurses have begun asking for librarian-mediated searches as they confront complex clinical questions that require expert searching skills (Holst et al., 2009). Hospital librarians support nursing professionals by finding and demystifying research studies (Rourke, 2007) and by overcoming the barriers faced by busy staff trying to locate the *best* evidence (Holst et al., 2009; Strickland & O'Leary-Kelley, 2009).

Evidence-based healthcare is a valuable tool in reducing the gap between what we know from research and what we do in practice. This research into practice gap has been recognized in all healthcare disciplines. Public policy can alter organizations as they respond to political pressure (Scott & Davis, 2007) to improve healthcare outcomes. One response to this pressure is the creation of the "informationist" role in some hospitals; an informationist is a team member who translates, synthesizes, and contextualizes research for others (Davidoff & Florance, 2000; Grefsheim et al., 2010). Another development in information services is the increasing number of knowledge brokers, information professionals who are able to link users and creators of knowledge to produce desired changes in healthcare providers (Funk, 1998; Thompson, Estabrooks, & Degner, 2006). The medical librarian, who is comfortable with reading research and translating findings for others, can easily fulfill the role of informationist or knowledge broker. Outside forces are once again reshaping the responsibilities of the medical librarian.

Conclusion and Recommendations for Further Research

The U.S. healthcare system emerged in response to forces identified in organization theory. The medical library's transformation from storehouse of knowledge to part of a network of information can be explained in terms of the major concepts of organization theory. Social structures and technology influenced how the librarian aligns the information needs of the hospital and its staff to the community it serves. Modernist theorists provide the framework for both the growth and decline of hospitals and medical libraries as technology has evolved. Symbolic-interpretive theorists explain how we recreate our roles in organizations and redefine *library work* in response to social systems. Postmodern theorists identify how power influences organizations and how professional librarians' status has changed over time.

Additional research questions about the differences between clinical librarians, knowledge brokers, and informationists need answers. Historical research cannot identify the forces yet to appear. New research questions about the importance of the library as *place* are emerging as librarians move to support specific units and information becomes mobile through the use of handheld devices. Organization theory is an excellent framework to use as librarians look at these trends and consider how the past has influenced today's organization of the hospital and medical library.

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International Legal Collections at U.S. Academic Law School Libraries

Camelia Naranch
San Jose State University, cnaranch@gmail.com

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Cover Page Footnote
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International Legal Collections at U.S. Academic Law School Libraries

Over the course of the past two decades, the process of globalization has had a dramatic impact on legal education in the United States (U.S.). Leading academic law schools now offer a wide range of courses in foreign, comparative, and international law. In response to dynamic changes happening on a global scale, a number of these schools are currently developing innovative new programs dedicated to specific topics, such as global business, human rights, environmental protection, international migration, and international conflict resolution. Law school librarians who have been involved with their development have consistently maintained that in order for these programs to be successful, the existing international legal collections at law school libraries will need to be transformed using new technology and Internet-based search tools. The past few years have witnessed a dramatic growth in the number of online legal guides and databases specifically dedicated to organizing relevant materials for the purposes of international legal research (Rumsey, 2008b). While international legal collections at U.S. academic law schools remain partially in print format, the most striking aspect of their current state is how much material is currently available on-line.

This study examines how law librarians are participating in the process of creating new fields of international legal research and training. It investigates the current state of international legal collections at twelve public and private U.S. academic law school libraries, illuminating in the process some of the significant shifts that characterize the nature of professional librarianship and information science in the twenty-first century. In theory as well as in practice, librarians at the law schools investigated in this study are supporting the efforts of legal scholars to make the study of foreign, comparative, and international law (often abbreviated as FCIL) an integral part of U.S. academic legal education. They remain active participants in the process in three major ways. First, librarians teach international legal research courses that train students in how to locate and evaluate sources. Second, librarians create and maintain the collections on which the new FCIL programs rely. They oversee a complex transition process from predominately print to mainly electronic materials and make decisions on which sources from their older collections to digitize. They also build and provide access to databases that contain current and historical legal information from around the world. Third, to help navigate through these large data collections, librarians design and maintain online legal research guides. These guides are the gateways that students and scholars use to conduct research quickly, effectively, and successfully.

The following investigation of the current state of international legal collections at a variety of public and private U.S. academic law school libraries

highlights some of the significant shifts that characterize the nature of professional librarianship and information science in the twenty-first century. Above all, it shows how dramatically the Internet has impacted the day-to-day operations of the modern library. It offers concrete evidence that libraries today are no longer just physical repositories of books, magazines, and on-site data. They are rapidly becoming powerful nodes in global digital networks of searchable and useful information essential for a growing number of professions. The routine work of law librarians now involves integrating electronic information and online search tools into their present collections. In the process, they must overcome the challenge of organizing enormous amounts and types of information that exists in multiple languages and is dispersed across a global landscape.

The New International Legal Landscape

First-year law students at a growing number of top-ranked U.S. schools will not find a single, all-inclusive course in international law in which to enroll. Instead, if these students are studying at Bay area locations like Berkeley or Stanford, or are enrolled at Georgetown, Harvard, Columbia, Chicago, Syracuse, or Duke, they will find a range of courses, programs, and clinics grouped together under the name of FCIL. These curricula cover a wide range of topics, from environmental regulations and corporate governance to international war crimes and refugee applications for asylum. When these students start work on their first research papers, they may well begin with a trip to their law school library, but not to spend hours on end reading weighty volumes of foreign legal codes and court decisions, buried under a mass of books, papers, and periodicals. They are more likely to head for the reference desk, where an international legal librarian might direct them to a particular online database, walk them through the steps outlined in a web-based research guide, or help them use the Internet to translate the foreign language sources that they find. The librarian might even be one of the student's instructors who lectures on international legal research methods as part of the programs offered and taught by members of the law school faculty.

Although these students may not be aware of it, they will be the first generation of American-trained lawyers to pass through programs of study in which foreign, comparative, and international law are integral parts of their professional training. Even if they never intend to practice law outside of the United States, they are likely to encounter clients and confront issues that are global in nature (Silver, Van Zandt, & De Bruin, 2008). These students also might choose career paths in a growing array of legal specialties, from international human rights advocacy to global business, for which advanced training and extensive exposure to international legal sources are essential.

As Friedman (2011) points out, most laws in the world remain local and domestic in nature. As a profession, law was less affected by earlier phases of globalization than was business. Until recently, international law was a specialized form of knowledge taught at U.S. law schools but only in a limited manner. Now, the situation is being transformed by schools like Harvard University, which have recognized the impact of globalization on the legal profession and taken rapid steps to reinvent their curriculum. Harvard offers more than 90 courses and reading groups focusing on foreign, international, and comparative law. Students can now take seminars in Asian or Middle Eastern law, for example, or intern with the Greater Boston Legal Services and work with immigrants and refugees seeking asylum. Harvard characterizes its approach well on their International Legal Studies website by referring to an international perspective as "foundational, rather than peripheral, to legal inquiry" (Harvard Law School, 2011). At Georgetown University, all first-year students now take an intensive one-week class at the start of their program called "Law in Global Context" that introduces them to a specific topic, such as extradition treaties or intellectual property rights (Georgetown University Law Center, 2011). Students at Cornell University can work with the Avon Global Center for Women and Justice, while those at U.C. Berkeley have the choice of programs offered by the Miller Institute for Global Challenges and the Law (Cornell University Law School, 2011; U.C. Berkeley School of Law, 2011).

Legal Librarians and the Internet

How did these programs and courses come about so quickly, and what informational resources currently exist to support them? The answer has a lot to do with librarians, and with the Internet. Creating the international legal collections to accompany the new programs of study was a major challenge, but also an opportunity, for librarians to demonstrate their abilities at managing very large amounts of data. In fact, law librarians began to discuss early in the process the potential of the Internet to assist them in building international legal collections. In 1991, the Library of Congress hosted a workshop that invited forty international participants active in producing, acquiring, editing, indexing, or distributing legislative information. The workshop was organized with the support of Harvard Law School Library, the New York Public Library, the United Nations Library, and a number of important public and private legal database providers, such as WestLaw and Lexis (Chiang & Price, 1992). The following year, Harvard law librarian Harry S. Martin (1992) made a preliminary proposal for a cooperative online international legal index in which scholars and students could exchange copies of foreign legal materials using a combination of email and telefax delivery systems.

These early initiatives helped set in motion a variety of pilot projects designed to test out the most effective means of sharing legal information across international borders. The development of the World Wide Web and improved hypertext transfer protocols in the mid-1990s greatly enhanced the abilities of legal scholars and librarians to share information using a simple click of the mouse. According to one roundtable panelist at the 1995 annual meeting of the American Society of International Law, "the beauty of the Web is that it provides instant, intuitive, hypertextual links and it will work on most computers with graphical interfaces, assuming, of course, software and hardware to connect to the Internet" (Zarins et al., 1995, p. 3). Such technological advances, the panelists realized, would create new possibilities for building the international legal collections at U.S. law schools.

Another proponent of the transformative potential of the Internet for international legal collection development was the New York University law librarian, Mirela Roznovschi. In an influential publication about the coming "cyberlegal culture" (2002), she observed that "in the www environment, we experience ubiquity, being in many different places simultaneously, and atemporality, being in an abstract time that overrides all global time zones" (p. 8). She was among the first reference librarians to create an online guide to international legal research, which was subsequently copied and refined by other librarians working at different U.S. law schools. At conferences, in books, and in academic journals, especially the *International Journal of Legal Information* and *Legal Reference Services Quarterly*, a number of participants in the process of creating such guides began to discuss their successes and strategies and offered suggestions for future development (Borgman, 2003; Germain, 2007; Haugen, 2005; Kimbrough, 2006).

As U.S. law schools began to implement their new approaches to teaching international law, a number of them established librarian-taught courses that familiarized students with the new search tools, online guides, and databases coming out at the time (Bird, 2011; Rumsey, 2009; Stanton, 2010). Currently, Duke Law School (2011) offers a course by Kristina Alayan on "Research Methods in International, Foreign, and Comparative Law." At Stanford Law School (2011), the equivalent course, taught by Sergio Stone, is called "Foreign and International Legal Research." The emergence of courses like these as part of law school FCIL curricula is reflective of a larger trend towards creating faculty and instructional opportunities for librarians who, in addition to MLS backgrounds, often are fluent in multiple languages and have JD or other advanced degrees. The emerging cyberlegal landscape owes a great deal to such individuals who are using their skills, experiences, and training to create the international legal collections that currently exist (Balleste, Luna-Lamas, & Smith-Butler, 2007).

International Legal Collections in Practice

There is at the present time no comprehensive analytical study of FCIL collections at public and private U.S. academic law schools. This study is based on an assessment of twelve leading U.S. law school libraries whose resources for research support advanced programs of study in the fields of foreign, comparative, and international law. These libraries were the Berkeley Law Library at the University of California – Berkeley; the Robert Crown Law Library at Stanford University; the Goodson Law Library at Duke University; the D'Angelo Law Library at the University of Chicago; the Edward Bennett Williams Law Library at Georgetown University; the Arthur W. Diamond Law Library at Columbia University; the Law Library at New York University; the H. Douglas Barclay Law Library at Syracuse University; the University of Iowa College of Law Library at the University of Iowa; the Lillian Goldman Law Library at Yale University; the Harvard Law School Library at Harvard University; and the Cornell Law Library at Cornell University. Because of its important and leading role in the development of FCIL collections, the study also included the U.S. Library of Congress in Washington, DC.

The international legal collections under investigation can be divided into three basic parts. These are: print sources, online research guides, and databases.

Print Sources

The first part of an international legal collection is print sources available to users at the libraries themselves. These include older materials, such as international law journals published in the late nineteenth and early twentieth centuries, in addition to more recently published monographs, conference proceedings, edited collections, and government documents. Researchers still rely upon printed materials, especially if they are interested in the history of foreign, comparative, and international law.

International legal researchers continue to rely upon printed reference works to familiarize themselves with new topics. One such example is the *Guide to International Legal Research*, which is published annually by the George Washington International Law Review (2011). Guides like this are helpful starting points for locating books, journal articles, documents, and databases on a wide range of topics organized both by country and theme. One recently added feature to the *Guide* is enhanced attention to Web-based sources, which are listed separately from print materials. In the case of intellectual property rights in Latin America, for example, the *Guide* lists an English-language reference work from 1997 as well as a more recent online bilingual database, INDECOPI (p. 665). The

former is useful for studying the historical background while the latter is the better choice for current laws and regulations. Reference guides work in tandem with another important source consulted frequently at the start of new research, the international legal encyclopedia, especially the Max Planck Institute's *Encyclopedia of Public International Law* (Bernhardt, 1992). In 2008, a new editorial team began the laborious process of updating and revising this reference work, posting the initial essays online while preparing a complete print version for future publication. The new encyclopedia, which is overseen by the Max Planck Institute for Comparative Public Law and International Law in Heidelberg, Germany, contains peer-reviewed entries written by more than 800 legal experts from around the world. It is now available both as an on-line edition and as a ten-volume print set (Wolfrum, 2012).

Online Research Guides

The next major part of an international legal collection is an online research guide. While a more recent addition than print reference works, these guides quickly have become the primary portal through which students and scholars gain access to other parts of the collections in print or electronic format. These guides are maintained by librarians at the individual law schools and are typically updated regularly to add, fix, or remove content. Such guides offer a convenient means of conducting basic and advanced legal research on a wide range of international issues. The guides are written with both beginners and experts in mind. The actual format of the guides varies widely from library to library. Some, like *Legal Research on International Law Issues Using the Internet*, developed by Lyonette Louis-Jacques (2011a) at the D'Angelo Law Library of the University of Chicago, have a detailed hypertext-based table of contents that links users to specific databases and sources of further information on specific topics. A student or faculty member doing work on international war crime, for example, can use the online *Guide to Foreign and International Law* to find historical materials from the Nuremberg War Crimes Tribunal established after the Second World War to try Nazi leaders for war crimes against humanity (Louis-Jacques, 2011b).

From the online research guide, two options exist. Both options transport users from the D'Angelo Law Library site to either that of Yale or Harvard University law schools, where the documents themselves are available. At Yale, a selection of sources is available in .html format as part of the Avalon Project maintained at the Lillian Goldman Law Library (2011). At Harvard Law School Library (2011), the Nuremberg Trials Project preserves in digital format an extensive collection of documents, photographs, and trial records from the 1940s. The D'Angelo war crimes guide also offers access to on-going criminal proceedings like the International Criminal Tribunal for the Former Yugoslavia.

A link takes users directly to the web site of the Hague-based Tribunal, where users can access daily news reports and updates concerning on-going trials and criminal proceedings. Audio and video recordings, some of which are accessible on YouTube, provide access to weekly press briefings and official statements.

The online international legal research guides from Berkeley, Columbia, Duke, Georgetown, Harvard, and Yale reveal similar features to that of the D'Angelo Law Library. One distinctive aspect of these guides is the cross-referencing of each other. In some cases, librarians created these guides collaboratively. For example, the Duke Law Library's guide to international law (2011) includes a link to an online international research tutorial at U.C. Berkeley, which librarians at Duke helped to design. In other cases, the guides take readers to the identical sites and databases, even if the process of finding the links is different. All of them also highlight the holdings in their permanent print collections and offer secure connections to subscription-only services and premium content for which user login and passwords are required. The guides are much more than collections of links, however, since all contain sections offering advice on how to locate the most reliable, accurate, and up-to-date information on specific topics. Researchers use these guides to navigate through data that is enormously complicated, dispersed, and written in many languages. Sections on foreign and comparative law are listed alphabetically by country, while subsections on international law provide links to major institutions, like the United Nations, the International Criminal Court, the World Trade Organization, and the European Court of Justice, as well as non-profit organizations and foundations that are involved with global issues like public health, environmental protection, refugee rights, or international finance.

Databases

The third major part of an international legal collection is the database. This section examines some of the essential online databases that currently provide the best access to a range of international legal materials. While the print and online guides discussed in the previous sections are often useful starting points when beginning new research, all of the FCIL collections investigated in this study primarily and increasingly contain materials that can be accessed using online databases. These virtual holdings, which comprise millions of individual documents, considerably add to whatever print materials each individual law school owns in its permanent collection. For many contemporary topics, these databases provide most, if not all, of the relevant sources. Many of the databases were created with a wide audience in mind and shaped by the principles of free access. The databases use keyword style search engines to help users locate primary documents, web sites, and other kinds of content. Much of these

materials are official government issued records available to the general public at no cost. The databases save users the time and effort that would be needed to locate these sources by visiting directly all of the relevant official and institutional sites that publish the information. They also offer means of finding historical legal documents in digital format that otherwise would be difficult to locate. Some of the databases that allow users to download journal articles and law review essays have restricted access. Researchers require library lending privileges for access to certain databases, such as Hein Online. Others require subscriptions to read and download the content. LawInfoChina (www.lawinfochina.com), maintained by a private company and Peking University, is a good example. In such cases, users may need to sign up for trial period membership or receive specific instructions and login information from a reference librarian. Other leading commercial vendors, like WestLaw and LexisNexis, also offer access to international legal resources to their subscribers. They include premium services such as automatic updates and citation generation, which open access sites do not.

The following databases are excellent examples of what an FCIL collection at a U.S. academic law school might look like. Each of these three sources—GLIN, EISIL, and GlobaLex—invariably appeared at or near the top of most of the online reference guides surveyed in this study.

GLIN. At the top of the list of databases on nearly all of the research guides I surveyed is the Global Legal Information Network (GLIN). It was created by the Law Library of Congress in 2004 as a full-text public legal database. A number of its founders were active in the Free Access to Law Movement (Germain, 2011). Its charter mission is "to promote the rule of law within and among nations, facilitating the orderly development of national and international laws, and encouraging mutual understanding among people of diverse legal heritages" (Medina, 2004, p. 605). GLIN's members come from around the world and collaborate towards the goal of building a "state of the art global electronic legal archive" (p. 605). Each jurisdiction contributes standardized metadata in its own official language and in one additional Network lingua franca: English. Users can input search criteria in a variety of languages, including French, Spanish, Portuguese, Arabic, Romanian, Korean, and Chinese (Simplified and Traditional). GLIN depends upon its global partners to provide documents and other relevant materials. Prospective members must apply for admission and agree to adhere to its guiding principles. Some parts of the world are less well represented in GLIN than others and only recently have there been efforts made to recruit more widely outside of the existing membership. Despite these limitations, GLIN is already a powerful research tool in the hands of knowledgeable users. GLIN also offers the possibility of subscribing to an Atom

web feed to receive regular updates when new documents related to a search inquiry are added to the database.

EISIL. Another important database is the Electronic Information System for International Law (EISIL). It is a partnership between the American Society of International Law and U.C. Berkeley Law School. It was founded in 2000 with the goal of becoming a "'one-stop shopping' site that would guide researchers to high quality international law information on the web" (Watson, 2005, p. 267). It provides access to primary documents, websites, and research guides. One specific feature of EISIL is that it provides short descriptions for each document or web resource, including tips on how to use them effectively. According to Watson (2005), EISIL offers distinct advantages over search engines like Google for finding legal resources, because it is more discriminating in its source selection and offers the value-added feature of entry descriptions (p. 271).

One of the strengths of EISIL is the clarity and organization of its home page, which prominently displays fourteen main international legal categories. The interface is very user-friendly and visually effective. It assists beginning researchers with helpful definitions of international legal terms and has special sections devoted to "Basic Sources," "Historical Materials," and "Treaty Collections." Working through the categories enables users to locate links to international government organizations (IGOs) as well as non-governmental organizations (NGOs). EISIL is designed to supplement international legal collections at libraries where the permanent holdings are limited in certain areas. It also can be incorporated into classroom instruction as a training tool to prepare students for conducting more advanced research. This makes it a good place to start preliminary work on a new subject by browsing through its logically structured web architecture.

GlobaLex. This database emerged as a prototype for conducting international legal research under the direction of NYU law librarian, Mirela Roznovschi, whose influence on the field has already been mentioned. While GlobaLex was clearly designed to support NYU's Hauser Global Law Program, it is, like GLIN and EISIL, available online to the wider public (Kuehl, 2006). It features research guides organized by country and subject. Notably, the international section includes links to organizations such as the African Union and Association of Southeast Asian Nations (ASEAN). There is also a detailed how-to guide written for librarians interested in building their own international legal collections. What is distinctive about GlobaLex is how closely it is connected to its founder, Ms. Roznovschi, who is extensively involved with a wide range of international legal initiatives and who teaches legal research courses outside of the United States in Russia, Hungary, and elsewhere. Because of her deep

personal involvement in the field, she updates GlobaLex on a regular basis, repairing broken web and enabling error-free access to foreign materials (Roznovschi, 2002). Based on her own impressive description of a typical working day in her book, *Towards a Cyberlegal Culture*, in which she reportedly checks her email messages to European colleagues at 6 a.m. and the ones from Australia and New Zealand late at night, in addition to working at the NYU legal reference desk and answering student emails about the status of the endangered Siberian tiger, it would seem that she is indeed a very important personal part of the international legal networks surveyed (pp. 3-6).

An Assessment Review: Trends and Challenges

The results of this study of FCIL collections at twelve public and private U.S. academic schools reveal a variety of notable trends in and significant challenges to the ongoing efforts of professional librarians and information specialists adapting to the digitization of large amounts of increasingly heterogeneous information. The collections under investigation emerged rapidly in the past decade as growing amounts of global legal information became available on-line (Rumsey, 2008a). As more governments committed themselves to making electronic versions of their laws, regulations, and court decisions available to the public, librarians at U.S. academic law schools responded by consolidating these sources into searchable databases and prepared research guides to facilitate their use.

Global Access

Claire Germain (2011), a professor of law and associate dean for legal information at the University Of Florida Levin College Of Law, writes about this process. Before digitization, accessing international legal information was extremely challenging. Germain argues that the early successes of projects like GLIN and GlobaLex encouraged government justice ministries and other official agencies to accelerate the process of putting legal information online without charging fees for the service. The trend towards free access has, in turn, made it possible for librarians to expand their digital FCIL collections rapidly and at low cost. The existence of public, decentralized databases like GLIN has prompted some governments in Africa, Asia, and the Middle East to participate by providing official documents (Germain, 2011, p. 192). The West African nation of Gabon, one of the countries that recently entered the network, explained its decision to join as part of a larger policy of transparency and good governance. GLIN's Gabon station includes a director responsible for daily management, three legal analysts who prepare the texts for submission, and an administrator who

handles accounts and digitization (p. 192). The justice ministry of Kuwait even goes so far as to display prominently its GLIN membership status on their official government e-justice website (p. 184). The result of such actions is an expanded and electronically accessible international legal database of growing proportions.

Ensuring Accuracy

As these databases continue to expand, however, new problems arise in maintaining them and ensuring that the information contained is current and accurate. Building up their international legal collections quickly was a priority for law school librarians who sought to keep pace with the new FCIL programs of study. They relied heavily upon the Internet to connect to the growing range of online guides and databases that came into existence in the past ten years. As these collections mature, some informed observers like Germain (2011) have raised important questions about the quality of the information contained. Some foreign countries, for example, post disclaimers about the documents published online and refer users to printed gazettes and legal code books for the official and authentic versions. Ensuring that online legal information is authentic and protected from error or outside manipulation is an ongoing process towards which a number of governments are working. Relying heavily on free access sources accessible only online, as Raisch (2011) points out, means that these collections are at risk in the event of technical difficulties, broken links, or loss of funding. Subscription-based services that provide access to additional international legal data effectively rent rather than own the materials as part of a permanent print collection. This means that the international legal collections at U.S. academic law schools are often quite substantial and remain susceptible to long-term access issues.

Preserving Knowledge

In the coming years, preserving all of this new international legal content will be challenging, but it also gives librarians an opportunity to assist in protecting what Germain (2011) calls the "digital heritage of mankind" (p. 195). All digital content is vulnerable to loss and subject to periodic migration from one platform to another. In the case of international legal information, the problem is particularly acute because of its dispersed locations, intricate distribution system, and linguistic complexity. A significant portion of the collections exist online and rely upon external servers to preserve the information. Often there are no print versions in the permanent collection that researchers might consult in the event of Internet service disruption. If librarians are able to figure out effective long-term ways of preserving these materials, the result could well be a valuable record of

the evolution of international law in the twenty-first century, one that future scholars might find particularly important. If this were the case, then the international legal collections currently maintained by U.S. academic law schools would not just serve a present need but also would become a future resource for studying how globalization is changing the way that our society is organized. Libraries have always served the purpose of storing and preserving knowledge for many generations of use, and there is no reason why this should be any different in the age of electronic information.

Conclusion

In summation, this study has revealed the central role that librarians have played, and continue to play, in developing FCIL collections and programs of study at some of America's top law schools. As committed information professionals, they have been actively involved in all stages of the process. As teachers, they instruct students in how to conduct international legal research. As information specialists, they prepare research guides and collaborate at a global level with their counterparts in other countries to create powerful new databases containing vast quantities of useful material about how the world is governed. As advocates for open access, they have also helped to create a system of information exchange that is largely free to use, with the important exception of some services that charge fees or require user specific passwords. And as critical observers of the collection building process, librarians continue to offer suggestions for improving the reliability of the international legal information upon which students and scholars depend. Some have raised concerns about the heavy reliance on Internet sources whose authenticity and accuracy cannot easily be determined. For this reason, reference works prepared by experts in the field and regularly revised and updated, like the George Washington Law Review's *Guide to International Legal Research*, the Max Planck Institute's *Encyclopedia of Public International Law*, and database systems like GLIN, EISIL, and GlobaLex are likely to remain essential tools.

The international legal collections at U.S. academic law schools surveyed in this study have a lot of information but are not always easy to navigate. FCIL collections as detailed as the ones investigated here are probably best used in consultation with reference librarians who can help users to get good results. These collections are fully operational but are still works in progress. For professional librarians, the task of creating international and foreign legal collections requires a range of skills. These include the ability to evaluate a wide range of foreign-language sources and to work with a number of different legal databases. It also requires librarians to work with the current generation of students who, as "digital natives," are more comfortable using online sources than

those that remain in print (Wayne & Lomio, 2005). Another important skill will be the ability to work collaboratively with colleagues not just within the United States but transnationally to achieve their objectives. The result of this work, as some advocates suggest, might be a virtual global legal library in which users could access a wealth of information (Gee, 2003, p. 534). Sharing this information across cultural, territorial, and generational boundaries may well be one of the most important roles that librarians can perform in the twenty-first century.

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